THE UNIVERSITY OF ALBERTA

OCCUPATIONAL INFORMATION AND REALISTIC HIGH SCHOOL PROGRAM PLANNING

BY

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Occupational Information and Realistic High School Program Planning" submitted by William P. Ostashewski in partial fulfillment of the requirements for the degree of Master of Education.

ABSTRACT

Grade nine students are required to plan high school programs that limit later occupational entry. To assist students in making realistic program plans, some schools have incorporated occupational presentations and a text, Decision-Making (Zingle, Safran, and Hohol, 1968) into their Grade Nine Guidance programs.

A field study compared the realism of simulated programs of thirty subjects from each of four schools. Each school provided the subjects with a different combination of occupational presentations and work using the Decision-Making text.

Three counsellors rated the realism of each simulated program with respect to Easter marks, California Short-Form Test of Mental Maturity IQs, Kuder interest profile, vocational choice, and indicated an "over-all" realism rating. Multiple linear regression was used to project a sixth rating that reflected the weights each counsellor assigned to the first four criteria.

An Occupational Information Scale was constructed and administered to test occupational awareness.

The Vocational Development Inventory: Attitude Scale was used to test vocational maturity.

The Student's t-test, one-way ANOVA, and the Newman-Keuls comparison between ordered means were used in data analysis. The significance level set for an acceptable difference was 0.05.

The following conclusions emerged from interpretation of results.

a. Occupational presentations increased the ability of male students to plan high school programs realistically.

b. Student occupational awareness was increased by Decision-Making accompanying occupational presentations.

c. Occupational presentations showed a strong tendency to increase the vocational maturity of male students.

DEDICATION

To

Nathaniel

Nadia

Patricia

Matthew

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CHAPTER I

INTRODUCTION

The importance of occupational infomation in educational-vocational decision-making has been and continues to be a topic of interest and concern to educationists. It is conceded that students need to be able to make realistic educational-vocational decisions. However, our knowledge, of the extent to which occupational infomation contributes to realistic decisions, is blurred. There has not been agreement, among counselling psychologists and psychological and vocational counsellors, on the development of and necessity for occupational infomation courses. As a result, school counsellors and group guidance teachers have not been confident about the emphasis they should place on student awareness of occupations. The present project is intended to determine the role of occupational infomation presentations and the efficiency of one system, for organizing such infomation, for purposes of senior-high school program planning.

Perspective

At the end of grade nine, students of Edmonton junior-high schools pre-register in a variety of senior-high school programs. Some composite high schools offer several levels within each of the academic, technical, and business areas. Minimum requirements are set for entry into each level of program (e. g. only a Grade Nine Diploma is necessary to enter a Technical-Trade Program). Each program provides students with certain competencies (academic or vocational) and possibilities for the future (e.g. a Business-

Matriculation Program provides university entrance and preparation for Business Education or Commerce). In choosing a program, students are expected to realistically consider their interests, abilities, achievements and their educational and vocational objectives (Edmonton Separate ..., 1969, p.4).

From the above, it is obvious that program choice moves students closer to some types of vocational goals and away from other possible ones (Peters and Shertzer, 1963, p. 238). For this reason, Marlowe (1968, p. 68) insists that, although students need not choose a career, they should know where various programs lead. In fact, program choice does affect future occupational entry (Halpern, 1968, p. 240; Wurtz, 1966, p. 129).

Rationale

The wisdom of requiring grade nine students to choose curricular programs, leading to specific vocational areas, is questioned by some educationists. Gribbons (1964, p. 908) refers to a "... familiar demand of vocational psychologists for the delay of one or more years in forced curricular choice." Wurtz (1966), as an example, suggests that such a "goal-oriented philosophy" should be discarded in favour of a developmental approach. He believes that yearly planning, based on current relevant infomation, is consistent with the concept of vocational development, while curricular program choice is not. Objections of this nature appear to be valid only if one assumes that curricular programs are inflexible and choice of such a program is final. In practice, neither is necessarily true (Zingle, Safran, and Hohol, 1968, p. 119). Furthemore, present curricula are criticized by people like O'Hara (1968, p. 637) and Marlowe (1968, p. 64) for lacking "goal directedness".

More important is the significance of vocational development for the grade

nine student. Blocher says, "In large part, the development of personal identity at this stage is synonymous with career development" (1966, p. 58). Marlowe (1968, p. 68) believes that vocational choice and self-image are inseparable. Therefore, Blocher (1966, p. 58), Marlowe (1968, p. 64) and others (O'Hara, 1968, p. 636; Stevens, 1968, p. 33) suggest that the total curriculum must contribute to career development.

Need for occupational infomation. Although "... education is occupationally directed" (Peters and Shertzer, 1963, p. 220), Marlowe (1968, p. 64) and O'Hara (1968, p. 638) insist that curricula are not sufficiently vocationally oriented. Blocher says that, "... realistic and well elaborated concepts of self and the ideal self are very important," and that, "The adolescent needs exposure to large amounts of realistic infomation about the world of work" (1966, p. 58). Since the regular curriculum is lacking in these aspects, Marlowe (1968, p. 68), O'Hara (1968, p. 639) and others (Peters and Shertzer, 1963, p. 238; Sinick and Hoppock, 1965, p. 21) agree that students should be taught about occupations.

Zingle et al. (1968, p. 13) and O'Hara (1968, p. 636) suggest that, to make a realistic educational-vocational decision, a student must know himself, the world of work, and the relationship between the two. This view is supported by Hollender's (1967) and Milliken's (1962) use of ability as criterion for realism of vocational choice. Gribbons (1964) used factors such as interests, relationship of interests to occupational choice, and values, in addition to abilities, in constructing his "readiness for vocational planning" scale. Crites (1965) proposed the use of awareness of occupations as part of vocational competence. It is apparent that, as students become more self-aware and recognize the aptitudes

and skills necessary for educational and occupational success, they become better able to make realistic plans (Astin, 1968, p. 964) and become more vocationally mature.

Need for method. Thoresen and Mehrens pose the question, "Why encourage infomation-seeking behavior about education and career if students fail to effectively use such infomation in choice-making?" (1967, p. 169). They question the assumption that simply providing students with accurate infomation will allow them to make "appropriate choices". Marlowe (1968, p. 3) agree with Thoresen's and Mehren's (1967, p. 166) suggestion that students need assistance in acquiring an effective system for processing relevant infomation.

To provide students with a system that would lead to wise or realistic educational-vocational decisions, the text, Decision-Making (Zingle et al., 1968) has been published. The strategy taught by the text is the scientific approach (Zingle et al., 1968, p. 197) using probability estimates. According to Gelatt and Clarke (1967, p. 332), the use of probability estimates is part of scientific decision-making.

Thoresen and Mehrens (1967, p. 167) point out that subjective rather than objective probability estimates are the bases of students' decisions. They show concern (Thoresen and Mehrens, 1967, p. 1968) that the use of objective data may not cause subjective probability estimates to be realistic. However, they agree (Thoresen and Mehrens, 1967, p. 170), as do Gelatt and Clarke (1967, p. 337), that evidence suggests that realistic subjective probability estimates are fomed from objective data. This supports the use of the scientific approach (i.e. the use of objective data) for educational-vocational decision-making.

Statement and Importance of the Problem

Some Edmonton schools have incorporated extensive study of occupations into their Grade Nine Guidance programs. Various methods, such as individual research and presentations by people from industry, are used. While many theorists and researchers (indicated above) support such action, to enhance the vocational development of students, others such as Sinick and Hoppock (1965, p. 24) suggest that the effectiveness of teaching occupations requires research. As well, various methods of teaching occupations (e.g. film presentations, field visits, classroom presentations by experts) require testing.

Further, to provide students with a systematic approach to educational-vocational decision-making, some schools are using Decision-Making (Zingle et al., 1968) as the Grade Nine Guidance text. Although there is some theoretical support for the method presented by the text, Thoresen and Mehrens argue that we are ignorant of the career decision process because theorists and researchers have not given "... consideration to contemporary decision theory" (1967, p. 166). Thus, the effectiveness, of the scientific method using probability estimates, in educational-vocational decision-making requires researching.

Since grade nine student plan senior-high school programs, one of the goals of the Grade Nine Guidance program is to enable them to plan these programs realistically (Zingle et al., 1968, p. 119). Both occupational presentations and the text, Decision-Making (Zingle et al., 1968), are relevant to this goal but require further research. The present project is intended to provide such information. It is intended to test the effectiveness of occupational presentations, by people outside the school, and the effectiveness of Decision-Making in assisting grade nine students to plan their senior-high school programs realistically.

CHAPTER II

RELATED LITERATURE AND HYPOTHESES

Related Literature

Readiness for vocational planning. Are grade nine students able to make educational-vocational plans effectively? Does a student know what infomation to use and how to use it? Will the program chosen, with a certain occupational area in view, be considered appropriate throughout the senior-high school years, or will the student wish to change to a completely different program? Super (1960) suggests that grade nine boys are ready to explore vocations but not ready to make vocational decisions. Yet, Wurtz states that, "... the selection of a curriculum is done ... for the purpose of vocational preparation" (1966, p.129). Since grade nine students must choose senior-high school programs, there is an apparent inconsistency between theory and practice. Research by Gribbons (1964) and Astin (1968) throws some light on this dilemma.

Gribbons (1964) did a longitudinal study, "Changes in Readiness for Vocational Planning from the Eighth to the Tenth Grade". In general, grade ten students were found to more prepared to make curriculum choices than grade eight students. However, results also showed than many grade ten students probably made curriculum choices based on irrelevant and inaccurate infomation, while many grade eight students were more advanced and ready to make vocational decisions.

Astin (1968) studied the stability of career plans of grade nine girls. The results of her research showed that: career choice changes from science, teaching, or professions were more frequent among girls of lower aptitude and achievement scores, and that changes from office worker or housewife were

more frequent among girls with high aptitude and achievement scores; girls changing initial career plans scored lower on interest characteristics most typical of girls choosing that career field than girls who retained their initial plans; career plan shifts caused career groups to become more differentiated in tems of personal characteristics.

The general conclusion of both of the above studies was that as students became more self-aware and recognized the occupational significance of aptitudes and skills, their vocational plans became more realistic. Gribbons' (1964, p. 913) suggestion, that some "intensive guidance" be provided to students who are not realistic in their planning, is a possible solution to the problem.

Need for occupational infomation. People who are involved in guidance and counselling do not agree on student need for awareness of a wide variety of occupations. Blocher (1966, p. 58), O'Hara (1968, p. 636), Peters and Shertzer (1963, p. 238), and Zingle et al. (1968, p. 13) are emphatic about the necessity for students to be informed about occupations. Ivey's and Morrill's opinions are clear in their statement, "Don't teach him [the student] about occupations" (1968, p. 649). Ivey and Morrill (1968) base their objections to teaching occupations on the grounds that this approach implies the necessity for a rational, occupational choice that is final. They insist that "career process" (rather than career choice) is a developmental process and involves feelings as well as intellect. Thompson (1962) agrees that non-rational factors, such as emotion, play an important part in vocational decisions. However, he also recognizes the need for occupational information. Thompson does not agree with Ivey's and Morrill's (1968) restricting implication that vocational develop-

ment is either fact or process based. His view, as that of Zingle et al., (1968, p. 27ff.), is that both are important.

Another objection raised, to the use of occupational information, is that occupational information becomes rapidly out-dated. Many of today's children will be employed in jobs that do not exist yet (Barry and Wolf, 1963). Salyer (1964, p. 67) agrees that jobs will change in techniques, but a "basic classification" will be retained. Borow (1969, p. 79-80) believes that it is precisely this "changing nature of working society" that will necessitate more concern for teaching students about occupations.

Approaches in effecting occupational awareness. Increase in need for vocational guidance (Bedal, 1969, p. 89) has brought with it concern for effective methods to increase student awareness of occupations. Scates and Brittain report that the U.S.A. Federal Government has sponsored approximately 200 projects, in the last decade, that deal with "... career development and related problems within vocational counselling and guidance" (1967, p. 485). Among these are projects concerned with vocational exploration and new approaches in dissemination of vocational information. Several typical approaches have been successful.

Work-experience programs, such as those reported by Slotkin (1964) and Littlefield (1966), have helped students achieve realistic vocational goals. It is apparent that work-station experiences help students see the relationship between school subjects and the world of work. However, since these programs also provided students with counselling, it is difficult to assign all the credit to the work-stations.

Another approach being used is that of teaching students about

occupations. Marlowe (1968, p. 68) suggests this should be done in the regular classroom. Stevens (1968) describes a project where courses and units using field trips, outside speakers, films, work-experience, and counselling were provided to grade seven and grade nine students. The intent was to compensate for lack of sufficient career orientation of regular curricula.

Osipow and Alderfer (1968) tried a novel method of teaching occupations, a "vocationally oriented speech course". They attempted to increase students' vocational maturity by having students speak about vocational topics, students informally discussed career development more often after the course than they had preceding it. If nothing else resulted, interest in career development was increased.

Hypotheses

The following thesis is suggested by research reviewed. To be able to plan senior-high school programs realistically, grade nine students need exposure to occupational infomation in order that they be aware of occupations. To process such information, these students also need to learn an effective strategy which will make them more mature in their approach to vocational decision-making.

Six testable hypothese emerge from the preceeding discussion:

1. Students who were exposed to occupational presentations are able to plan senior-high school programs more realistically than students who were not exposed to occupational presentations.
2. Students who used Decision-Making are able to plan senior-high school programs more realistically than students who did not use Decision-Making.

3. Students differ in their ability to plan senior-high school programs realistically depending upon whether they were exposed to occupational presentations, used Decision-Making, experienced both, or neither.
4. Students who were exposed to occupational presentations are more occupationally aware than students who were not exposed to occupational presentations.
5. Students differ in their awareness of occupations depending upon whether they were exposed to occupational presentations, used Decision-Making, experienced both, or neither.
6. Students who used Decision-Making are more vocationally mature than students who did not use Decision-Making.

CHAPTER III

PROCEDURES AND METHODS

Procedures

Samples. Testing the effectiveness of classroom use of occupational presentations and the text, Decision-Making, separately and in combination, requires four groups of students. Random samples of thirty grade nine students were taken from each of four Edmonton Separate Schools. An attempt was made to select schools whose students represented a wide range of socio-economic backgrounds. Only schools, whose Grade Nine Guidance programs required individual research of occupations, were used. However, each sample differed in whether or not the students were exposed to occupational presentations, used Decision-Making, experienced both, or neither. This design provided the possibility of isolating both factors under consideration as well as their combination. It also excluded, to a large extent, individual research of occupations from affecting the results.

Simulated senior-high school program planning. This project required that the senior-high school programs of the subjects be rated for realism of choice. Since grade nine students do not formally plan their entire programs, simulated senior-high school programs (see Appendix A) were required of each subject.

St. Joseph Composite High School, E.S.S.B., provides students with the full range of programs: academic, technical and business. For this reason, it was decided that this schools' "Planning Your Program" booklet was a good

base of infomation to provide to the subjects for this part of the study. This made it possible to maintain some control of unrealistic planning due to lack of infomation about various educational programs available. As well, the example programs at the back of the booklet were intended to help subjects understand the clerical aspects of planning. To ensure that subjects did not get confused, a step-by-step approach (giving subjects clerical instructions) was prepared for a tape recorder presentation. Caution was exercized to include no help in actual decision making beyond suggesting that the program should be suitable for the vocational choice. Finally, a "Senior-High Program" sheet was prepared to assist subjects in the clerical aspects of planning and to make clear to them the requirements of a complete program.

Measuring the realism of programs. Since an appropriate scale for rating the realism of the simulated senior-high school programs was not available, it was necessary to prepare one. Relevant literature and research (Edmonton Separate..., 1969, p. 4; Halpern and Norris, 1968, p. 243; Hollender, 1967, p. 315; Gribbons, 1964, p. 910; Super, 1961, p. 37) suggest that the realism of senior-high school program plans is related to the student's achievement, ability, interests, and vocational choice. Each of these criteria were used in preparing the Realistic Program Planning Scale (see Appendix B).

Measures of students' achievement were provided by their Easter Report Card marks. This is the measure of achievement used, by Edmonton Separate high-schools, in pre-registering students for grade ten. Since both subjects and counsellors (involved in rating) were familiar with the use of this measure, simulation of program planning and rating was enhanced.

Students' California Short-Fom Test of Mental Maturity scores (taken

seventeen months prior to other data collection) provided three scores of students' intellectual ability. Since the CTMM is generally acceptable (Cronbach, 1960, p. 229) and CTMM scores were readily available for each student, they were used in this study. Lorge-Thorndike scores (taken concurrently with this project for another study) were available for fifty-one of the subjects. Comparison of these scores with CTMM scores provided a validity check on the CTMM scores. Finally, although Cronbach states that, "... there is little evidence to indicate the practical significance between the two [" Language" and "Non-Language" CTMM] IQs" (1960, p. 229), infomation in the test manual (Sullivan et al., 1957, p. 10) and Goldman (1961, p. 326) support their use. Thus, "Language", "Non-Language", and "Total" IQs were provided.

Infomation on students' interests was provided by their "profiles" on the Kuder Preference Record: Vocational Form C. Cronbach (1960, p. 417ff.) provides support for the use of this instrument, but cautions that grade nine students' interests have not yet crystalized.

The final criterion provided was occupational choice. Since senior-high school programs lead to vocational areas (Halpern, 1968, p. 240; Wurtz, 1966, p. 129; Peters and Shertzer, 1963, p. 238), students should choose programs that will lead to, or at least include, their vocational choice. Research on the use of this criterion is sparse. However, Holland and Lutz (1968), and Cronbach (1960, p. 419ff.) support the validity of its use.

To achieve realism scores for each senior-high school program, three school counsellors rated the realism of each program in view of Easter Report Card marks, CTMM IQs, Kuder profile, and vocational choice separately. Two additional realism scores were obtained. The counsellors also gave a combined rating which was to indicate the "over-all" realism of each program.

This provided the counsellors the opportunity to be influenced by factors other than the four criteria. Lastly, step-wise multiple linear regression was used to determine the average weights of the four criteria that best predicted the average combined ratings of all three counsellors. Using these weights (see Appendix C) the four criteria were combined into a projected rating that represented only the four criteria. The above procedure yielded a total of six separate realism ratings to test hypotheses one, two, and three (refer to CHAPTER II).

Measuring occupational awareness. Hypothesis four is based on the idea that occupational presentations increase student awareness of occupations. Since an appropriate scale to measure student awareness of occupations was not available, the Occupational Infomation Scale (see Appendix D) was constructed. Thus, regardless of whether or not occupational presentations affected realistic program planning ability, it was possible to determine their effect on occupational awareness. It was also possible to determine the effect of occupational presentations, in combination with the Decision-Making text, on the subjects' occupational awareness.

Since the Occupational Infomation Scale was developed as part of the present project, infomation regarding the validity and reliability of the instrument was considered desirable. The Occupational Infomation Scale is essentially an achievement test. Therefore, content validity is of "first importance" (American Psychological Association, 1966, p. 14). Content validity was accrued by using generally accepted sources of occupational information (e.g . occupational monographs). CHAPTER IV provides a detailed description of how sources of information were used in developing the Occupational Infomation Scale. Secondly, construct validation is a lengthy process (Cronbach, 1960, p. 121)

beyond the scope of the present project. However, the present project provided the opportunity to derive some estimates of the construct validity (i.e. occupational awareness) of the Occupational Information Scale. Thirdly, an estimate of the internal consistency of the instrument was calculated by analysis of subject responses. Lastly, retesting forty-nine subjects (after a two week interval) provided an estimate of the stability of the Occupational Infomation Scale. Validity and reliability coefficients obtained are reported in CHAPTER VI.

Measuring vocational maturity. In order that students "deal effectively" with senior-high school program choice and make realistic decisions, they must objectively consider the relationship of their abilities, interests, and values to their vocational choice (Gribbons, 1964, p. 913; Zingle et al., 1968, p. 13). Astin (1968, p. 964) found that as students become more aware of these relationships, their vocational plans become more realistic. This view of (Osipow and Alderfer, 1968, p. 245), or attitude towards, vocational choice is only part of "vocational maturity", as defined by Crites (1965, p. 4ff.). However, a measure of this factor logically provides a measure of vocational maturity.

Although the text, Decision-Making, provides a system for analyzing and organizing relevant infomation, it has another purpose. It is also intended to assist students to objectively consider the relationship of their achievements, abilities, interests, and values to their vocational choice. Therefore, separate from its effect on senior-high program planning, a measure of vocational maturity was used to test the effectiveness of Decision-Making.

The scale of vocational maturity used was the Vocational Development Inventory: Attitude Scale (Crites, 1965). Crites developed this scale to measure student attitudes towards vocational choice. Form III of the instrument has been

used to measure student vocational maturity (Crites and Semler, 1967; Osipow and Alderfer, 1968). The stability coefficient of the Vocational Development Inventory: Attitude Scale for ninth through twelfth graders (N = 1648) retested after one year was .71 (reported by Crites in an undated, unpublished summary of research on his vocational development inventory). The refined Form IV of the instrument was used in this project to test the effectiveness of the Decision-Making text in increasing student vocational maturity. A test-retest procedure for Form IV (conducted as part of the present project) yielded a reliability estimate of .73 (N = 49) over a two week interval.

Methods

Collection of general data. Infomation regarding sex, age, and vocational choice of subjects was acquired as general infomation on the various instrument answer sheets. CTMM IQs were acquired from Edmonton Separate School District, Pupil Personnel Services office records.

Administration of the instruments. An independent administrator, unaware of the hypotheses involved, administered the instruments in the majority of cases. Thus, the possibility of the author's expectations affecting the results was kept to a minimum. However, the first administration of each instrument was conducted by the author. Following that, extreme care was taken to ensure that administrations conducted by the author and the independent administrator were highly equatable. In the several cases where absences necessitated call-backs, administration was conducted by the author.

The order in which the instruments were administered was: Kuder,

Simulated Senior-High School Program Planning exercize, then the Vocational Development Inventory and the Occupational Infomation Scale. TABLE I indicates the minimum and maximum times required by subjects for completion of each instrument

The final stage of data collection involved three counsellors rating the realism of each simulated senior-high school program. Programs prepared for rating (see Appendix B) provided only necessary infomation. Infomation regarding the subjects' names and schools was cut away. Kuder profiles and Realistic Program Planning Rating Sheets were attached to the programs. Sex and CTMM IQs were indicated on the rating sheets. Random program numbers were assigned to each prepared program. Programs were ordered according to the random program numbers. This method of preparation was repeated for each counsellor, except that new random program numbers were used in each case. Thus, counsellors were totally unaware of the subject and the school involved in each program. As well, any effect that order of programs had on rating was balanced by the programs appearing in a different order for each counsellor. Instructions for rating appeared on each rating sheet.

Organization of the Thesis

The prime intention of this project is to determine the effectiveness of occupational presentations in assisting grade nine students to plan their senior-high school programs realistically. However, literature reviewed earlier suggested that students need a system of organizing and analyzing such information. As well, they need to see the relationship of occupational and other relevant infomation to program planning. Since the Decision-Making text is intended to supply these two needs, the effectiveness with which it does so was tested. Theoretically, occupational presentations and Decision-Making

TABLE 1

MINIMUM AND MAXIMUM TIMES REQUIRED BY SUBJECTS FOR COMPLETION OF EACH INSTRUMENT (IN MINUTES)

SCHOOL**	V		W		X		Y	
INSTRUMENT	TIMES		TIMES		TIMES		TIMES	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
Kuder	55	70	45	65	43	72	47	78
S.H.S. Program Planning	45	53	40	47	39	51	41	50
Vocational Development Inventory	8	15	6	14	11	18	9	18
VDI Retest	7	13	5	12				
Occupational Infomation Scale	15	20	12	20	15	17	15	22
OIS Retest	12	19	8	17				

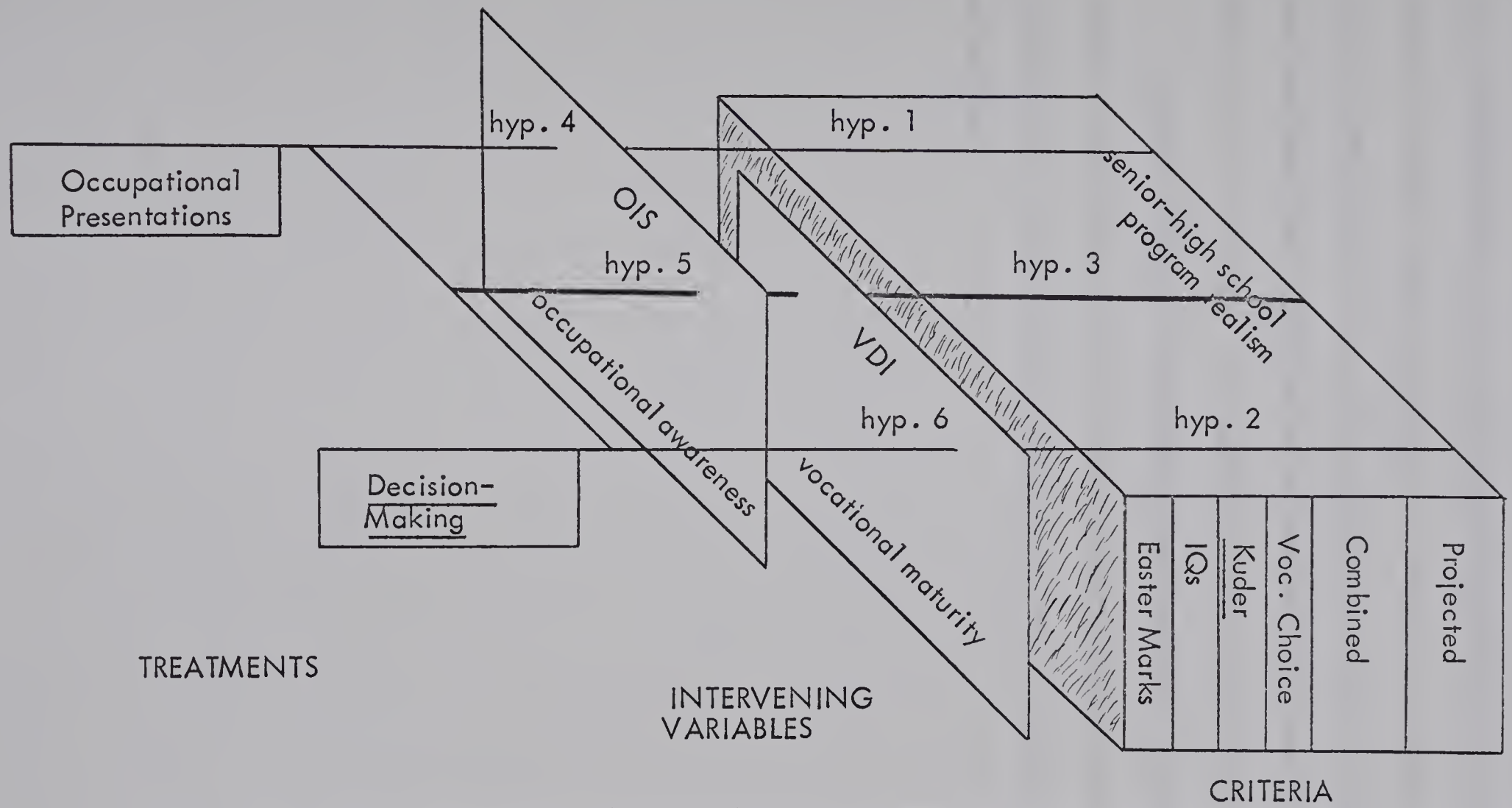
**SCHOOL: V (Occupational presentations and Decision-Making)
W (Occupational presentations only)
X (Decision-Making only)
Y (neither)

effect the "intervening variables" occupational awareness and vocational maturity, respectively. In turn, these constructs effect student ability to plan senior-high school programs realistically. This project measures the flow of effect at both the intervening variable and criteria levels. Figure 1 is a pictorial representation of the relevance of each instrument used in testing the hypotheses regarding this flow of effect.

Limitations of the Study

Since this project made use of variations in Grade Nine Guidance programs rather than prescribing various rigidly controlled treatments, it is an empirical rather than an experimental study. While this may impose some limitations on the study to the extent that results may reflect the presence of factors other than the independent variables (i.e. occupational presentations and Decision-Making) certain advantages were gained. The variations that existed among the Grade Nine Guidance programs were a result of the teachers' choice rather than prescribed treatment. This provided some assurance that all programs were presented with enthusiasm. More important, however, is that the "halo effect" resulting from experimental conditions was avoided. As well, an attempt was made to control for factors other than the independent variables. As mentioned, earlier, an attempt was made to choose schools attended by students of comparable socio-economic status. Another factor for which some control was provided was individual research of occupations. Although only schools which required such study by their students were used, no control for the time spent or methods used was possible. As well, no control was possible for other factors such as field trips, films or other possible teaching techniques.

Further, the two factors in which variation was required (i.e. occupational



(The Occupational Information Scale is designated OIS. The Vocational Development Inventory: Attitude Scale is designated VDI.)

Figure 1. Relevance of each instrument to hypothesis testing.

presentations and the use of Decision-Making)were not controlled. Although one school used in this project had eight occupational presentations and the other had six, differences in topics among other things did exist. Differences also existed in the ways, Decision-Making was used. More intense and exclusive treatments would have enhanced the possibility of clear-cut results; however, it was considered that variations that existed naturally were sufficient to produce differences in the criterion (i.e. realistic program planning ability) among students.

Finally, difficulty was expected from the lack of occupational infomation suitable for girls compared to the amount of such infomation suitable for boys. For this reason, it was decided to analyze data separately by sex as well as in combination.

CHAPTER IV

DEVELOPMENT OF THE OCCUPATIONAL INFORMATION SCALE

Determining the effectiveness of occupational presentations in assisting students to plan senior-high school programs realistically is the main purpose of this project. The literature reviewed earlier showed that theorists anticipate an increase in realism of senior-high school programs to result from occupational presentations. This expected increase in ability to plan programs realistically is suggested to result from greater occupational awareness. Therefore, the present project attempts to assess differences in occupational awareness in addition to expected differences in ability to plan programs realistically. Thus, assuming that results show that occupational presentations increase realistic program planning ability, the significance of occupational awareness in producing this effect will be clarified. The purpose, then, of developing an occupational infomation scale (see Appendix D) was to provide an empirical measure of occupational awareness.

Structure

Various sources agree, generally, on the aspects of an occupation that are important for study. Pamenter (1967b, pp. 56-57), "Canadian Occupations... (1967), National Vocational Guidance... (1964, pp. 222-224), and Zingle et al. (1968, pp. 156-160) all agree on the following aspects: nature of the work, duties and working conditions, personal qualities, education and training, employment prospects, and rewards. Some of the above sources also suggest such information as: history and importance of the work, how to get started, and related occupations. Of the aspects agreed upon by all four sources cited above, all

except rewards were chosen to be used in constructing the occupational information scale. Other aspects were considered too temporal, relative or local in nature to test accurately. A sixth aspect, future general living conditions related to work,was added to test knowledge of economic trends. Pamenter's (1967a, pp. 29-30) presentation of probable future conditions provided the source of infomation.

Item Preparation

Sources of infomation for the different job aspects varied. The series of "Canadian Occupations: Brief" and the series of "G.C. Occupational Monographs" were the sources of infomation on nature of work (NW), duties and working conditions (DWC), personal qualities (PQ) and education and training (ET). Information for employment prospects (EP) was taken from Pamenter's (1967a, p. 17) predictions of future job opportunity. Items regarding future general living conditions (FC) were based on Pamenter's presentation of, "... things in everyday living that we may encounter between now and 2014...", (1967a, pp. 29-30).

An effort was made to ensure that items concerning NW, DWC, PQ, and ET covered the full range of types of occupations. The Dictionary of Occupational Titles: Third Edition (DOT) was used as a source of job classification. Both series of occupational monographs (identified above) were classified according to the first three digits of the numerical classification system used in the DOT. Four occupations from each job class 000 to 900 were chosen randomly, yielding forty occupations. This was possible in all except the 500 class where only one occupation was available in monograph description. To compensate, one occupation was chosen from the 400 class and two were taken from the 600 class. The series of NW, DWC, PQ, and ET were rotated ten times through the ten job classes in such a way that the four job aspects were used once in each job class. Figure 2 illustrates the

	Job Class:									
	000	100	200	300	400	500	600	700	800	900
Job Aspect:	NW	DWC	PQ	ET	NW	DWC	PQ	ET	NW	DWC
	PQ	ET	NW	DWC	PQ	ET	NW	DWC	PQ	ET
	ET	NW	DWC	PQ	ET	NW	DWC	PQ	ET	NW
	DWC	PQ	ET	NW	DWC	PQ	ET	NW	DWC	PQ

Figure 2. Order of job aspects used in preparation of items concerning NW, DWC, PQ, and ET.

result.

Two sets of forty items were developed from the above structure. One set required students to choose the best of three job aspect statements to describe the title specified. The other set required that students choose, one of the three job titles (i.e. the one most representative of the job aspect description contained in the item stem). The order of the correct response and distractors was randomized in both sets.

Fifteen items concerning EP were prepared. Pamenter (1967a, p. 17) lists a series of occupations in three groups: Group 1, occupations which will probably offer excellent opportunity for employment in the near future; Group 2, occupations that will likely offer employment opportunities for the same percentage of the labour force as at present; Group 3, occupations that are likely to offer only limited opportunity for employment in the future. Each test item in this set contained an occupational title from each of the three groups. Care was taken to avoid overlap of occupations between this set of items and the first sets. In all fifteen items, the order of the occupations was randomized. In the first five items, students were to choose the occupation that will probably provide employment for a greater percentage of the future labour force than it does now. In the next five items, students were to choose the occupation that will probably

offer employment for the same percentage of the future labour force as it does now. In the last five items, the students were to choose the occupation that will probably offer employment to a smaller percentage of the future labour force than it does now.

Ten items were prepared to test subjects on FC. Pamenter's (1967a, pp. 29-30) presentation of future living conditions was assumed to be accurate. Items contained one of the predictions and two distractors in randomized order. Students were to choose the accurate prediction of future living conditions.

Pilot Projects

In order that a final form of an occupational infomation scale with high internal consistency be developed, items were field-tested. From the entire set of items, two tests were constructed. One test contained the first set of items on the first four job aspects (i.e. NW, DWC, PQ, and ET) and the items concerning FC and EP. The second test contained the second set of items on the first four job aspects as well as the items concerning FC and EP. This system was used to avoid students gaining clues from one set of items on the first four job aspects to answer the second set on the same job aspects.

Each test was administered to approximately seventy students in different schools other than those used in the complete project. Both schools belong to the Edmonton Separate School District. An attempt was made to choose schools attended by students with a wide range of socio-economic backgrounds. Also, both schools used Decision-Making in their Grade Nine Guidance programs. However, the schools differed in that in only one, students were required to research occupations.

Item Analysis

An item analysis was perfomed on both sets of data. Statistics of interest were item difficulty and item-total biserial correlation. The results on items retained for the final form of the Occupational Infomation Scale are presented in Appendix E. The computer program used is described by Fehlberg and Flathman (1968). Item difficulty limits (within which items were acceptable) were set at 0.16 to 0.85. Although Fehlberg and Flathman (1968, p. 8) explain that the biserial correlation becomes distorted as the level of item difficulty deviates greatly from 0.5, a wide range of difficulty was considered desirable to avoid possible skewing of data on responses to the final occupational infomation scale. For this reason, liberal limits were set on item difficulty. A limit on item-total biserial correlation was set at 0.195. This is clearly within the critical value of the correlation coefficient at the 0.05 level of significance for a one-tailed test (Ferguson, 1966, p. 413).

Construction of the Scale

The Occupational Infomation Scale was constructed from items from both tests that were acceptable in terms of the limits set. From the first two sets of forty items (concerning the first four job aspects) the better of the matched items was chosen (see Appendix E). This yielded twenty-three items. The best eight items concerned with FC were used (nine were acceptable). The fourteen items concerned with EP that were within the limits of acceptability were retained. Thus, the number of items included in the Occupational Infomation Scale totalled to forty-five. The final version appears in Appendix D.

CHAPTER V

STATISTICAL ANALYSIS AND RESULTS

The contents of this chapter represent the culmination of the present project. The results reported below reflect the relevance of each preceeding section to the specific hypotheses tested. Therefore, a summary of the variables, in operational terms, is followed by a restatement of the hypotheses in those terms. The statistics applied to data in testing the hypotheses are identified. Finally, the results of statistical analysis of data are presented.

Operational Definition of Terms

The criterion of the present project (i.e. ability to plan senior-high school programs realistically) is defined as subjects' scores on the Realistic Program Planning Scale (see Appendix B). This is the dependent variable. Three counsellors rated each program on five scale criteria. A sixth scale criterion was projected. For purposes of hypothesis testing, averages of the three scores on each scale criterion were used in conjunction with the projected scores (see Appendix C). The independent variables are occupational presentations and use of the Decision-Making text (Zingle et al., 1968). Occupational presentations, designated OP, refers to occupational presentations by people other than school staff members. Use of Decision-Making refers to subjects' use of the text and is designated DM. Two intervening variables are expected to be effected by the independent variables (i.e. OP and DM). The intervening variable, occupational awareness, which is expected to result from OP, is measured by the Occupational Information Scale (see Appendix D). This scale is designated OIS.

The use of DM is expected to result in: an effective strategy for organizing infomation relevant to program planning, and vocational maturity. The intervening variable, maturity of apporach to educational-vocational decision making, is tested by the Vocational Development Inventory: Attitude Scale developed by Crites (1965). This scale is designated VDI.

Operational Hypotheses

1. Subjects who were exposed to OP will have a significantly higher mean rating, on the Realistic Program Planning Scale, than subjects who were not exposed to OP.
2. Subjects who used DM will have a significantly higher mean rating, on the Realistic Program Planning Scale, than subjects who did not use DM.
3. There will be significant differences in mean rating, on the Realistic Program Planning Scale, among all four groups of subjects.
4. Subjects who were exposed to OP will have a significantly higher mean score on the OIS than subjects who were not exposed to OP.
5. There will be significant differences in mean OIS scores among all four groups of subjects.
6. Subjects who used DM will have a significantly higher mean score on the VDI than subjects who did not use DM.

Statistical Analyses

Although the analysis of collected data was relatively simple, a variety of statistical methods were necessary. The t-test was used to determine the significance of differences between means for hypotheses 1, 2, 4, and 6. In analyzing

the data for hypotheses 3 and 5, one-way ANOVA with the Newman-Keuls test for significant differences between ordered means was used. Appropriate correlation coefficients were calculated in several instances (e.g. reliability of the OIS reported in CHAPTER VI). Step-wise multiple linear regression was used to calculate subjects' projected scores on the Realistic Program Planning Scale (see Appendix C). Lastly, the level of statistical significance for an acceptable difference in testing the hypotheses was set at, or greater than, .05.

Results

Results for the following hypotheses were based on three assumptions. It was assumed that groups of subjects, compared in hypothesis testing, were highly equatable on factors other than the variables tested. It was also assumed that the criteria used in the Realistic Program Planning Scale were representative of subjects' past achievement, intellectual ability, interests, and vocational choice. Finally, it was assumed that the instruments used (e.g. OIS, VDI) are valid for the purposes intended (e.g. OIS was intended to test occupational awareness) and that they are sufficiently reliable. Without these assumptions, hypothesis testing would necessarily remain inconclusive. Detailed argumentation regarding these assumptions is presented in CHAPTER VI.

Hypothesis 1. Testing the first hypothesis was an attempt to detemine the effectiveness of occupational presentations in increasing student ability to plan senior-high programs realistically. To test this hypothesis, mean Realistic Program Planning Scale scores (i.e. the criteria) of OP and non-OP subjects were compared. Results of the t-test analyses perfomed are reported in TABLE 2. The results

TABLE 2

STUDENT'S t-TEST RESULTS ON COMPARISONS OF MEAN CRITERION SCORES FOR OP AND NON-OP SUBJECTS

CRITERIA	(z score) OP MEANS	(z score) NON-OP MEANS	t-ratio	P
SEXES COMBINED				
A	0.12	-0.13	1.600	.112
B	0.09	-0.09	1.175	.242
C	0.01	-0.01	0.141	.875
D	0.06	-0.08	0.927	.356
Combined	0.11	-0.11	1.407	.162
Projected	0.09	-0.09	1.225	.223
N	60	60	df = 118	
FEMALES				
A	-0.06	0.01	0.316	.755
B	-0.10	0.05	0.700	.484
C	-0.10	0.12	1.136	.261
D	-0.10	0.02	0.557	.582
Combined	-0.08	0.09	0.843	.403
Projected	-0.10	0.06	0.825	.413
N	36	32	df = 66	
MALES				
A	0.40	-0.28	2.872*	.006
B	0.37	-0.26	2.853*	.006
C	0.19	-0.16	1.536	.131
D	0.30	-0.18	2.384*	.021
Combined	0.40	-0.34	3.105*	.003
Projected	0.39	-0.27	2.828*	.007
N	24	28	df = 50	

* Indicates that the t-ratio is significant (α=.05).
Criteria: A (Easter Marks), B (IQ), C (Kuder profile), D (Vocational Choice).

indicate that only male OP subjects received significantly higher mean scores than their counterparts, on all criteria except Criterion C (see Appendices B and C for detailed criteria descriptions). Therefore, hypothesis 1 was rejected with regards to subjects combined by sex and in the case of female subjects alone. However, hypothesis 1 was confimed, except by criterion C scores, for males. The appropriate conclusions are the following:

a. occupational presentations did not significantly affect the ability of students combined by sex and female students to plan senior-high school programs realistically;

b. occupational presentations did significantly increase male student ability to plan senior-high school programs realistically with respect to achievement, intellectual ability, vocational choice, and in general.

Hypothesis 2 . The second hypothesis contains the suggestion that the use of Decision-Making (Zingle et al., 1968) increases student ability to plan senior-high school program realistically. This hypothesis was tested by comparing mean Realistic Program Planning Scale scores on DM and non-DM subjects. TABLE 3 contains the results of the t-test analyses perfomed. Analyses results show no significant differences existed, in mean criteria scores, between DM and non-DM subjects. Therefore, hypothesis 2 was rejected for subjects combined by sex, females and males. The conclusion indicated is that use of the Decision-Making text did not significantly affect student ability to plan senior-high school programs realistically.

Hypothesis 3 . This hypothesis contains the assumption that various combinations, of exposure to or lack of OP and DM, cause differences in student ability to plan senior-high school programs realistically. Two analyses techniques were used to test the hypothesis. Subjects differed in their exposure to OP and DM by school. Therefore, analyses of variance were perfomed on data to determine if significant differences existed, among the schools, in criteria scores. Where "global" significant differences were obtained through variance analyses,

TABLE 3

STUDENT'S t-TEST RESULTS ON COMPARISONS OF MEAN CRITERION SCORES FOR DM AND NON-DM SUBJECTS

CRITERIA	(z score) DM MEANS	(z score) NON-DM MEANS	t-ratio	P
SEXES COMBINED				
A	-0.02	0.02	0.224	.826
B	0.01	-0.02	0.173	.872
C	-0.05	0.05	0.678	.500
D	-0.03	0.02	0.300	.764
Combined	-0.01	0.01	0.141	.899
Projected	-0.02	0.02	0.316	.758
N	60	60	df = 118	
FEMALES				
A	0.06	-0.11	0.781	.437
B	0.02	-0.07	0.424	.670
C	0.00	0.00	0.000	.988
D	0.02	-0.10	0.566	.574
Combined	0.06	-0.06	0.632	.529
Projected	0.03	-0.09	0.608	.546
N	33	35	df= 66	
MALES				
A	-0.11	0.18	1.179	.245
B	-0.00	0.06	0.265	.787
C	-0.11	0.12	1.034	.305
D	-0.09	0.18	1.253	.216
Combined	-0.10	0.11	0.831	.410
Projected	-0.09	0.18	1.095	.278
N	27	25	df = 50	

No significant differences existed (α=.05).
Criteria: A (Easter Marks), B (IQ), C (Kuder profile), D (Vocational Choice).

detailed analyses of the data were perfomed. This was accomplished by using the Newman-Keuls test for significant differences between ordered means. TABLEs 4, 5, and 6 present the results of variance analyses perfomed on data for sexes combined, females, and males, respectively. TABLEs 4 and 5 show that significant differences did not exist, among the schools, in criteria scores for sexes combined and females. Thus, with respect to sexes combined and females,

TABLE 4

VARIANCE ANALYSES RESULTS IN COMPARING CRITERION SCORES BY SCHOOL FOR SEXES COMBINED

CRITERIA	SOURCE	MS	df	F-ratios	P
A	Groups	0.69	3	0.92	.435
	Error	0.75	116		
B	Groups	0.35	3	0.49	.692
	Error	0.73	116		
C	Groups	0.11	3	0.16	.922
	Error	0.67	116		
D	Groups	0.23	3	0.34	.799
	Error	0.68	116		
Combined	Groups	0.49	3	0.65	.581
	Error	0.75	116		
Projected	Groups	0.37	3	0.52	.666
	Error	0.71	116		

None of the F-ratios are significant (α=.05).

hypothesis 3 is rejected. TABLE 6 indicates that significant differences did exist, among schools, in criteria scores for males. Such differences were found with respect to all criteria except criterion C. Analysis procedure (outlined above) required that detailed analyses be performed on data where variance analyses derived significant differences. Correspondingly, the Newman-Keuls test for significant differences between ordered means was applied to the data relevant to all criteria except criterion C. TABLE 7 presents the results of these detailed analyses. Mean criteria scores of school W (OP, non-DM) were found to be significantly higher than those of school Y (non-OP, non-DM) with respect to criterion B, D, Combined, and Projected (see Appendices B and C for criteria

TABLE 5

VARIANCE ANALYSES RESULTS IN COMPARING CRITERION SCORES BY SCHOOL FOR FOR FEMALES

CRITERIA	SOURCE	MS	df	F-ratios	P
A	Groups	0.28	3	0.38	.767
	Error	0.73	64		
B	Groups	0.34	3	0.45	.716
	Error	0.75	64		
C	Groups	0.37	3	0.55	.648
	Error	0.66	64		
D	Groups	0.26	3	0.35	.791
	Error	0.76	64		
Combined	Groups	0.40	3	0.58	.630
	Error	0.69	64		
Projected	Groups	0.40	3	0.62	.607
	Error	0.66	64		

None of the F-ratios are significant ($\alpha = .05$).

descriptions). Mean criteria scores of school W (OP, non-DM) were also found to be significantly higher than those of school X (non-OP, DM) with respect to criterion D, Combined, and Projected. These findings offer only partial confirmation of hypothesis 3 for male subjects. Conclusions regarding hypothesis 3 are related to the various combinations of exposure to or lack of occupational presentations and the use or absence of Decision-Making. Several conclusions are indicated by the findings.

a. For students combined by sex and for females, various combinations of occupational presentations and Decision-Making, did not significantly affect student ability to plan senior-high school programs realistically.

TABLE 6

VARIANCE ANALYSES RESULTS IN COMPARING CRITERION SCORES BY SCHOOL FOR MALES

CRITERIA	SOURCE	MS	df	F-ratios	P
A	Groups	2.20	3	2.99*	.040
	Error	0.74	48		
B	Groups	2.17	3	3.54*	.021
	Error	0.61	48		
C	Groups	0.80	3	1.21	.315
	Error	0.66	48		
D	Groups	1.58	3	3.01*	.039
	Error	0.52	48		
Combined	Groups	2.64	3	3.63*	.019
	Error	0.73	48		
Projected	Groups	2.29	3	3.29*	.028
	Error	0.70	48		

* Indicated that the F-ratio is significant ($\alpha = .05$).

b. Occupational presentations significantly increased the ability of male students, to plan senior-high school programs realistically, in comparison to male students lacking both occupational presentations and Decision-Making with respect to intellectual ability, vocational choice, and in general.

c. Occupational presentations also significantly increased the ability of male students, to plan senior-high school programs realistically, in comparison to male students who used Decision-Making with respect to vocational choice and in general.

TABLE 7

SCHOOLS COMPARED BY USING NEWMAN-KEULS COMPARISON

BETWEEN ORDERED MEANS OF CRITERIA SCORES FOR MALES

SCHOOL		V OP, DM	W OP, non-DM	X non-OP, DM	Y non-OP, non-DM
	N	11	13	16	12
EASTER MARKS(A)	(z score) MEANS	Studentized Range values for 48 df ($\alpha = .05$)			
Y	-0.18	(2) 1.786	(3) 2.939	(2) 0.720	
X	-0.36	(3) 2.506	(4) 3.659		
W	0.52	(2) 1.157			
V	0.25				
IQ (B)					
Y	-0.44	(3) 0.357	(4) 4.435*	(2) 1.474	
X	-0.12	(2) 1.328	(3) 2.966		
W	0.53	(2) 1.633			
V	0.17				
VOC. CHOICE(D)					
Y	-0.22	(3) 1.159	(4) 3.762*	(2) 0.296	
X	-0.16	(2) 0.858	(3) 3.461*		
W	0.55	(2) 2.603			
V	0.02				
COMBINED					
Y	-0.39	(3) 2.401	(4) 4.059*	(2) 0.411	
X	-0.29	(2) 1.994	(3) 3.649*		
W	0.58	(2) 1.655			
V	0.18				
PROJECTED					
Y	-0.29	(3) 1.806	(4) 3.809*	(2) 0.150	
X	-0.25	(2) 1.661	(3) 3.659*		
W	0.60	(2) 1.999			
V	0.17				

The critical qr values are: (2) 2.84, (3) 3.42, (4) 3.76.
Numbers in parentheses indicate Range (R).
* Indicates that the qr value is statistically significant.

d. In comparison to each other, all other combinations of occupational presentations and Decision-Making did not significantly affect male student ability to plan senior-high school programs realistically.

Hypothesis 4. The fourth hypothesis contains the suggestion that occupational presentations increase student awareness of occupations. In testing hypothesis 4, the Occupational Infomation Scale was used to measure student occupational awareness. OP and non-OP groups were compared by applying the Student's t-test to mean OIS scores. The analyses results, presented in TABLE 8, indicate that no significant differences existed between mean, group OIS scores. Therefore, hypothesis 4 was rejected for subjects combined by sex, females and males. The conclusion warranted is that occupational presentations did not significantly affect student occupational awareness.

TABLE 8

OP AND NON-OP GROUPS COMPARED BY APPLYING STUDENT'S t-TEST TO OIS MEANS

SEX	N	MEANS	df	t-ratio
COMBINED				
OP	60	25.43	118	1.664
non-OP	60	23.82		
FEMALES				
OP	36	24.42	66	1.123
non-OP	32	23.00		
MALES				
OP	24	26.96	50	1.493
non-OP	28	24.75		

Critical t-ratios ($\alpha = .05$) are: 1.980 (118 df), 2.000 (66 df), 2.009 (50 df). None of the t-ratios are statistically significant.

Hypothesis 5. The fifth hypothesis was tested in an attempt to determine if various combinations, of exposure to or lack of OP and DM, cause differences in student occupational awareness. Since subjects varied in their exposure to OP and DM by school, "global" differences in OIS scores, among schools, were first obtained through variance analyses. Results are reported in TABLE 9. Although none of the comparisons produced significant differences, the comparison of OIS scores of schools for sexes combined yielded 94.9% confidence (rather than the required 95.0%) that differences in OIS scores existed among the schools.

TABLE 9

VARIANCE ANALYSES RESULTS IN COMPARING OIS SCORES BY SCHOOL

SEX	SOURCE	MS	df	F-ratios	P
Combined	Groups	73.35	3	2.67	.051
	Error	27.52	116		
Females	Groups	37.11	3	1.39	.253
	Error	26.65	64		
Males	Groups	43.90	3	1.57	.209
	Error	27.99	48		

None of the F-ratios are significant ($\alpha = .05$); however, results provide 94.9% confidence (rather than 95.0%) that OIS scores of schools for sexes combined are different.

Therefore, detailed comparison of OIS scores of schools for sexes combined was performed. Results, of the Newman-Keuls comparison between ordered means, are presented in TABLE 10. The detailed comparison shows that, for sexes combined, the mean OIS score of school V (OP, DM) was significantly higher than that of school Y (non-OP, non-DM). Thus, results obtained yield only partial confimation of hypothesis 5. The following conclusions are indicated.

TABLE 10

SCHOOLS COMPARED BY APPLYING NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS TO OIS SCORES FOR SEXES COMBINED

SCHOOL		V OP, DM	W OP, non-DM	X non-OP, DM	Y non-OP, non-DM
SEXES	MEANS	Studentized Range values ($\alpha = .05$)			
	N	30	30	30	30
Combined	df = 116				
Y	22.90	(4) 3.933*	(2) 1.357	(3) 1.914	
X	24.73	(2) 2.018	(2) 0.557		
W	24.20	(3) 2.576			
V	26.67				

Critical qr values are: (116 df): (2) 2.80, (3) 3.36, (4) 3.68
Numbers in parentheses indicate Range (R).
* Indicates that the qr value is statistically significant.

a. Only occupational presentations combined with Decision-Making significantly increased the occupational awareness of students combined by sex, in comparison to students lacking both occupational presentations and Decision-Making.

b. The various combinations of occupational presentations and Decision-Making did not significantly affect the occupational awareness of male or female students considered alone.

Hypothesis 6. The implication, that the use of Decision-Making increases student vocational maturity, is contained in the sixth hypothesis. The Vocational Development Inventory: Attitude Scale was used to measure student vocational maturity. Hypothesis 6 was tested by comparing mean VDI scores of DM and non-DM groups. The results of t-test analyses perfomed are reported in TABLE 11. No significant differences were found in comparing mean VDI scores of sexes combined, females or males. Therefore, hypothesis 6 was rejected. The conclusion, indicated by the results, is that the use of Decision-Making did not significantly

TABLE 11

DM AND NON-DM GROUPS COMPARED BY APPLYING STUDENT'S t-TEST TO VDI MEANS

SEX	N	MEANS	df	t-ratio
COMBINED				
DM	60	35.90	118	0.000
non-DM	60	35.95		
FEMALES				
DM	33	36.12	66	0.283
non-DM	35	36.46		
MALES				
DM	27	35.63	50	0.332
non-DM	25	35.24		

Critical t-ratios (α=.05) are: 1.980 (118 df), 2.000 (66 df), 2.009 (50 df). None of the t-ratios are statistically significant.

affect student vocational maturity.

CHAPTER VI

SUPPLEMENTARY ANALYSES

In order that hypothesis testing be conclusive, certain assumptions regarding the various groups of subjects and instruments used were necessary in CHAPTER V. Detailed consideration, of some of those assumptions, is provided in this chapter. Following that, the hypotheses results are considered in view of the additional statistics provided.

Analyses of General Data on Groups of Subjects

The assumption was made, that the groups of subjects compared in hypothesis testing, were highly equatable on factors other than the variables OP and DM. Information regarding subjects' age, Language IQ, Non-Language IQ, and Total IQ was collected for the present project. Detailed comparison of subject groupings, on each of these factors, is reported below.

OP and non-OP subjects compared. The results of general data comparisons of OP and non-OP subjects are provided in TABLE 12. The Student's t-test was applied to mean age, Language IQ, Non-Language IQ, and Total IQ scores of the two groups. Results show that male non-OP subjects were significantly older than male OP subjects. Also, for sexes combined, females, and males, OP subjects had significantly higher mean Non-Language IQs than their counterparts. Finally, significant differences were found between Total IQ means of OP and non-OP groups for sexes combined and for males. In both sex comparisons, OP subjects had higher Total IQ means. All other comparisons of the two groups yielded no significant differences.

TABLE 12

OP AND NON-OP GROUPS COMPARED BY APPLYING STUDENT'S t-TEST TO MEANS OF GENERAL DATA

SEX	COMBINED				FEMALES				MALES			
GROUP	N	MEANS	df	t-ratio	N	MEANS	df	t-ratio	N	MEANS	df	t-ratio
AGE												
OP	60	14.63	118	0.173	36	14.72	66	1.691	24	14.50	50	2.059*
non-OP	60	14.65			32	14.47			28	14.86		
LANG IQ												
OP	60	109.08	118	0.616	36	104.92	66	0.510	24	115.33	50	1.929
non-OP	60	107.60			32	106.53			28	108.82		
NON-LANG IQ												
OP	60	105.75	118	3.087*	36	103.50	66	2.317*	24	109.13	50	2.225*
non-OP	60	97.90			32	96.44			28	99.57		
TOTAL IQ												
OP	60	107.62	118	2.154*	36	104.42	66	1.030	24	112.42	50	2.362*
non-OP	60	103.02			32	101.69			28	104.54		

Critical t-ratios (α=.05) are: 1.980 (118 df), 2.000 (66 df), 2.009 (50 df).
* Indicates that the t-ratio is statistically significant.

DM and non-DM subjects compared. The Student's t-test analyses, of general data on DM and non-DM groups, derived no significant differences in any of the comparisons. The results presented in TABLE 13 suggest that, for each of the three sex comparisons, the DM and non-DM groups were highly equatable.

Comparison of subjects exposed to various combinations of OP and DM. TABLEs 14, 15, and 16 present the results of comparisons of subjects by school. The schools provided the following exposure variations: V (OP, DM), W (OP, non-DM, X (non-OP, DM), Y (non-OP, non-DM). The Newman-Keuls test for significant differences between ordered means was applied to each sex grouping. TABLE 16 shows that males of school Y were significantly older than the males of the other three schools. TABLEs 14 and 16 indicate that, for sexes combined and males, both Language and Total IQ means of school W were significantly higher than those of school Y. Also, for sexes combined, the school X Language IQ mean is significantly higher than that of school Y. TABLEs 14 and 15 report that, for sexes combined and females, the Non-Language IQ mean of school W is significantly higher than that of school Y; it is also significantly higher than that of school X for sexes combined only. Finally, it is relevant to note that all other sex grouping comparisons of the schools, on general data, yielded no significant differences. While this is not tantamount to stating that the sex groupings are identical on the remaining comparisons, 95% confidence that they are different cannot be established.

TABLE 13

DM AND NON-DM GROUPS COMPARED BY APPLYING STUDENT'S t-TEST TO MEANS OF GENERAL DATA

SEX	COMBINED				FEMALES				MALES			
GROUP	N	MEANS	df	t-ratio	N	MEANS	df	t-ratio	N	MEANS	df	t-ratio
AGE												
DM	60	14.58	118	1.010	33	14.58	66	0.346	27	14.59	50	1.166
non-DM	60	14.70			35	14.63			25	14.80		
LANG IQ												
DM	60	109.60	118	1.049	33	107.00	66	0.812	27	112.78	50	0.566
non-DM	60	107.08			35	104.43			25	110.80		
NON-LANG IQ												
DM	60	101.35	118	0.361	33	99.55	66	0.387	27	103.56	50	0.200
non-DM	60	102.30			35	100.77			25	104.44		
TOTAL IQ												
DM	60	105.67	118	0.316	33	103.42	66	0.224	27	108.41	50	0.141
non-DM	60	104.97			35	102.86			25	107.92		

Critical t-rations ($\alpha = .05$) are: 1.980 (118 df), 2.000 (66 df), 2.009 (50 df).
None of the t-ratios are statistically significant.

TABLE 14

SCHOOLS COMPARED BY USING NEWMAN-KEULS COMPARISON

BETWEEN ORDERED MEANS OF GENERAL DATA ON SEXES COMBINED

SCHOOL		V OP, DM	W OP, non-DM	X non-OP, DM	Y non-OP, non-DM
	N	30	30	30	30
	MEANS	Studentized Range values for 116 df (α = .05)			
AGE					
Y	14.77	(3) 1.147	(2) 1.147	(4) 2.010	
X	14.53	(2) 0.863			
W	14.64	(2) 0.000			
V	14.63				
LANG IQ					
Y	103.03	(2) 1.717	(3) 3.478*	(4) 3.921*	
X	112.17	(3) 2.204	(2) 0.443		
W	111.13	(2) 1.760			
V	107.03				
N-LANG IQ					
Y	95.67	(3) 2.745	(4) 5.279*	(2) 1.777	
X	100.13	(2) 0.968	(3) 3.501*		
W	108.93	(2) 2.533			
V	102.57				
TOTAL IQ					
Y	99.67	(2) 2.549	(4) 5.099*	(3) 3.223	
X	106.37	(2) 0.673	(2) 1.876		
W	110.27	(3) 2.549			
V	104.97				

The critical qr values are: (2) 2.80, (3) 3.36, (4) 3.68.
Numbers in parentheses indicate Range (R).
* Indicates that the qr value is statistically significant.

TABLE 15

SCHOOLS COMPARED BY USING NEWMAN-KEULS COMPARISON

BETWEEN ORDERED MEANS OF GENERAL DATA ON FEMALES

SCHOOL		V OP, DM	W OP, non-DM	X non-OP, DM	Y non-OP, non-DM
	N	19	17	14	18
	MEANS	Studentized Range values for 64 df ($\alpha = .05$)			
AGE					
Y	14.50	(2) 1.203	(3) 1.733	(2) 0.464	
X	14.43	(3) 1.674	(4) 2.198		
W	14.76	(2) 0.523			
V	14.68				
LANG IQ					
Y	102.28	(2) 0.331	(3) 1.413	(4) 3.103	
X	112.00	(3) 2.772	(2) 1.690		
W	106.71	(2) 1.082			
V	103.32				
N-LANG IQ					
Y	94.50	(3) 1.827	(4) 4.288*	(2) 1.471	
X	98.93	(2) 0.356	(3) 2.817		
W	107.41	(2) 2.462			
V	100.00				
TOTAL IQ					
Y	98.67	(2) 1.221	(4) 3.318	(3) 2.655	
X	105.57	(2) 1.434	(2) 0.663		
W	107.29	(3) 2.097			
V	101.84				

The critical qr values are: (2) 2.83, (3) 3.40, (4) 3.74.
Numbers in parentheses indicate Range (R).
* Indicates that the qr value is statistically significant.

TABLE 16

SCHOOLS COMPARED BY USING NEWMAN-KEULS COMPARISON

BETWEEN ORDERED MEANS OF GENERAL DATA ON MALES

SCHOOL		V OP, DM	W OP, non-DM	X non-OP, DM	Y non-OP, non-DM
	N	11	13	16	12
	MEANS	Studentized Range values for 48 df ($\alpha = .05$)			
AGE					
Y	15.17	(3) 3.685*	(4) 4.184*	(2) 3.217*	
X	14.62	(2) 0.475	(3) 0.967		
W	14.46	(2) 0.499			
V	14.55				
LANG IQ					
Y	104.17	(3) 2.780	(4) 3.819*	(2) 2.439	
X	112.31	(2) 0.342	(3) 1.380		
W	116.92	(2) 1.038			
V	113.46				
N-LANG IQ					
Y	97.42	(3) 2.190	(4) 3.087	(2) 0.862	
X	101.19	(2) 1.329	(3) 2.225		
W	110.92	(2) 0.897			
V	107.00				
TOTAL IQ					
Y	101.17	(3) 2.746	(4) 3.877*	(2) 1.760	
X	107.06	(2) 0.986	(3) 2.117		
W	114.15	(2) 1.132			
V	110.36				

The critical qr values are: (2) 2.84, (3) 3.42, (4) 3.76.
Numbers in parentheses indicate Range (R).
* Indicates that the qr value is statistically significant.

Considerations Related to the Realism Rating Scale

CTMM IQs. Goldman (1961, pp. 296-299) suggests that California Short-Form Test of Mental Maturity scores are less accurate than those of tests such as the Lorge-Thorndike Intelligence Tests or the Otis Quick-Scoring Mental Ability Tests. He refers to studies showing that CTMM scores vary more greatly with Otis scores than do Lorge-Thorndike scores, or the scores of other popular tests (e.g. Terman-McNemar Test of Mental Ability, Pinter General Ability Tests). This implies that the use of CTMM scores, in this project, was a poor choice. Since current Lorge-Thorndike IQs were available for fifty-one subjects, to test the accuracy of CTMM IQs, they were compared to the Lorge-Thorndike IQs. Language, Non-Language and Total IQs were cross-correlated; the resulting coefficients are provided in TABLE 17. Although the correlation coefficient

TABLE 17

CROSS-CORRELATIONS OF CTMM AND LORGE-THORNDIKE IQs

CTMM	LORGE-THORNDIKE		
	LANG IQ	NON-LANG IQ	TOTAL IQ
Lang IQ	0.86*		
Non-Lang IQ		0.66*	
Total IQ			0.85*
(N=51)			

* Indicates that the coefficient is significant (α=.05)

obtained between the Non-Language IQs is only moderate (specifically 0.66), the coefficients of correlation between the Language IQs and the Total IQs are high (0.86 between the Language IQs and 0.85 between the Non-Language IQs). While some reservations may be held regarding the accuracy of CTMM

Non-Language IQs, assuming that the Lorge-Thorndike is accurate, the accuracy of the CTMM Language and Total IQs is certainly acceptable.

Criteria. To provide some appreciation of the distinctiveness of the criteria used in the Realistic Program Planning Scale (see Appendix B), and the accuracy of the Combined scores, the Criteria were compared with each other. Inter-correlations of subject scores on each Criterion are reported in TABLE 18.

TABLE 18

INTER-CORRELATIONS OF CRITERIA

CRITERIA	A	B	C	D	COMB'D	PROJ'D
	coefficients (N = 120)					
A		0.74*	0.63*	0.51*	0.86*	0.89*
B			0.57*	0.47*	0.81*	0.83*
C				0.49*	0.78*	0.80*
D					0.73*	0.75*
Combined						0.97*
Projected						

* Indicates that the coefficient is significant ($\alpha = .05$).

The correlations between Criteria A, B, C, and D were found to be only moderate (i.e. ranging from 0.47 to 0.74), indicating that each Criterion was quite distinct from the others. Thus, each of the Criteria is considered to have been important to this project. Additional support for the distinctiveness of Criteria A, B, C, and D comes from the similarity in weights, assigned to each, for predicting the Combined criterion (see Appendix C). If any one Criterion had been superfluous, the weight assigned to it would have been negligible compared to the rest.

In considering the accuracy of the Combined scores, an appreciation of

their derivation is necessary. Counsellors provided Combined ratings, later transfomed into z scores (see Appendix C), that were to represent "over-all" program realism scores. Assuming that each counsellor's Combined ratings should reflect definite proportions of each of Criterion A, B, C, and D throughout his rating of subjects' programs, at least two sources of error may have made the Combined criterion scores inaccurate. The first possible source of error was the inconsistency of each counsellor, regarding the proportions of Criteria A, B, C, and D reflected in his Combined ratings. Such inconsistency was expected, since counsellors were requested to provide "global" Combined ratings rather than calculate them mathematically. A second source of error was possible in that counsellors may have reacted to factors (e.g. clerical errors, age or sex of subject) other than Criteria A, B, C, and D when they rated programs on the Combined scale. An attempt was made to calculate program realism scores that excluded the possible sources of error. The Projected criterion provides the resultant set of scores (see Appendix C).

Comparison of the Combined and Projected scores made it possible to estimate the effect of the sources of error on the Combined scores. With a correlation coefficient of 0.97 between Combined and Projected scores (see TABLE 18, page 49) only 12% of the variance of Combined scores can be attributed to possible sources of error. Thus, the Combined scores were considered to be highly accurate.

Reliability. By correlating each counsellor's ratings with those of the other two counsellors, estimates of the reliability of counsellors' ratings were obtained. TABLE 19 reports reliability estimates ranging from 0.44 to 0.68. Although higher correlations would have been a greater asset to this project,

TABLE 19

RELIABILITY ESTIMATES OF COUNSELLORS' RATINGS

CRITERIA	COUNSELLOR RATING COMPARISONS		
	1 - 2	1 - 3	2 - 3
A	0.66*	0.51*	0.65*
B	0.57*	0.53*	0.60*
C	0.50*	0.46*	0.44*
D	0.53*	0.46*	0.47*
Combined (N = 120)	0.68*	0.53*	0.60*

* Indicates that the coefficient is significant ($\alpha = .05$).

the moderate correlations are sufficient to provide for confidence regarding the use of the Realistic Program Planning Scale.

Statistics Relevant to the Occupational Infomation Scale

Construct validity. Consideration was given for the construct validity of the OIS (i.e. occupational awareness). The purpose of the OIS was to clarify expected higher ratings on the Realistic Program Planning Scale, due to OP. The theory suggested, by the literature reviewed earlier, is that occupational awareness, resulting from OP, effects an increase in ability to plan programs realistically. Therefore, in order that the OIS be effective for the purpose intended, assurance that the OIS measures occupational awareness was considered necessary.

The present project did not provide comparison between subjects exposed to occupational infomation and subjects with no such exposure (all subjects did individual research). However, it was possible to compare subjects who were exposed to OP alone, and in conjunction with DM to subjects exposed to neither OP nor DM. Therefore, the resulting construct validity coefficients reflect only

the increase in occupational awareness due to OP and OP with DM. Point biserial correlation coefficients were calculated from data on the groups of subjects specified above. These correlation coefficients are presented in TABLE 20 as estimates of the construct validity of the OIS. Although the results are expectedly low, they do provide some assurance that the OIS measures occupational awareness.

TABLE 20

POINT BISERIAL CORRELATION COEFFICIENTS ESTIMATING THE CONSTRUCT VALIDITY OF THE OIS

SCHOOL**	SEX OF SUBJECTS					
	MIXED		F		M	
	N	coeff.	N	coeff.	N	coeff.
School W compared with School Y	60	0.23*	35	0.05	25	0.21
School V compared with School Y	60	0.34*	37	0.21	23	0.30
Schools V & W compared with Schools X & Y	120	0.15	68	0.14	52	0.21

School** V (OP and DM)
W (OP only)
X (DM only)
Y (neither)

* Indicates that the coefficient is significant ($\alpha = .05$).

Reliabilty. Two types of reliability coefficients were calculated for the OIS. KR 20 coefficients were calculated for the total test, and each sub-test of the OIS, from subject responses. These are presented in TABLE 21 as estimates of the internal consistency of the OIS. Also, a coefficient estimating the stability of the OIS (over a two week interval) was calculated. A correlation coefficient

TABLE 21

ESTIMATES OF THE INTERNAL CONSISTENCY OF THE OIS

CALCULATED BY USING THE KR 20 FORMULA

	ALL ITEMS (1 - 45)	SUBTEST 1 (1 - 23)	SUBTEST 2 (24 - 31)	SUBTEST 3 (32 - 45)
KR 20 coefficient (N= 120)	0.66*	0.37*	0.59*	0.52*

Subtest 1: Items regarding "nature of the work", "duties and working conditions", "personal qualities", and "education and training".
Subtest 2: Items regarding "future general living conditions".
Subtest 3: Items regarding "employment prospects".

* Indicates that the coefficient is significant ($\alpha = .05$).

of 0.71 (N= 49) was derived. Reliability coefficients were considered sufficiently high to command confidence in the use of the OIS in the present project.

Reconsideration of the Hypotheses Results

Anticipating the possibility that the assumptions made in CHAPTER V for purposes of hypothesis testing were false, available statistics regarding the equatability of groups and the validity and reliability of the instruments have been presented. The statistics suggested that the instruments were sufficiently valid and reliable. However, several of the groups used in hypothesis testing were found to differ on some general data variables. Therefore, the effect these differences may have had on the hypotheses results must be evaluated.

Reviewing the significant differences in age, Language, Non- Language, and Total IQs that existed between groups would be redundant; this has already been done in great detail. TABLEs 12 to 16, pages 42 to 47, and the subject grouping comparisons that accompany the tables provide complete descriptions of

the significant differences obtained. However, statistics on the degree of relationship that existed between hypotheses variables and general data variables are, at this point, very useful. Therefore, they are reported in TABLE 22.

TABLE 22

CORRELATIONS BETWEEN GENERAL DATA VARIABLES

AND HYPOTHESES VARIABLES

GENERAL DATA VARIABLES	AGE	LANG IQ	N-LANG IQ	TOTAL IQ
HYPOTHESES VARIABLES	coefficients		(N = 120)	
Criterion A	-0.14	0.41*	0.30*	0.41*
Criterion B	-0.21*	0.44*	0.48*	0.53*
Criterion C	0.05	0.21*	0.22*	0.25*
Criterion D	-0.15	0.21*	0.28*	0.29*
Combined	-0.19	0.42*	0.39*	0.47*
Projected	-0.14	0.39*	0.38*	0.45*
OIS	-0.11	0.47*	0.36*	0.48*
VDI	-0.17	0.34*	0.24*	0.34*

* Indicates that the coefficient is significant ($\alpha = .05$).

Although high correlations between hypotheses and general data variables would not be sufficient infomation to establish cause-effect relationships, the validity of the hypotheses testing results would certainly be questionable. However, low coefficients of correlation between hypotheses and general data variables would not lessen the validity of the hypotheses testing results.

The correlations between age and the hypotheses variables (see TABLE 22) are only slight, ranging from 0.05 to -0.21. Therefore, there is no reason to suspect that subjects' age differences affected hypothesis testing results.

Coefficients of correlation between hypotheses variables and Language, Non-Language, and Total IQs (see TABLE 22) are all in the low to low-moderate range with a maximum of 0.53 and a minimum of 0.21. Although definite

relationships did exist, they were considered too small to have been responsible for the results obtained in hypothesis testing. Further evidence supporting the conclusion, that group differences in IQs were not responsible for results obtained, is available (e.g. regarding hypothesis 3 results: IQ means of schools W and X were similar, yet significant differences were found between criteria means). However, additional argumentation is not considered necessary.

Much consideration has been given to the possible effect of group differences on the results of hypothesis testing. Such consideration was important; however, the similarities between groups (see TABLEs 12 to 16, pages 42 to 47) are also relevant. Further, none of the hypotheses variables correlated highly with any of the general data (Age, Language IQ, Non-Language IQ, Total IQ) variables. Therefore, although it was possible to adjust scores or control for general data variables in data analysis, such action was considered unnecessary. Thus, conclusions arrived at through hypothesis testing in CHAPTER V remain unchanged.

Secondary Findings Related to Occupational Presentations

An unexpected, but not contradictory, effect was obtained when mean VDI scores of OP and non-OP subjects were compared. TABLE 23 shows that the

TABLE 23

OP AND NON-OP SUBJECTS COMPARED BY APPLYING STUDENT'S t-TEST TO VDI MEANS OF MALES

GROUP	N	MEAN	df	t-ratio	P
OP	24	36.67	50	1.980	.053
non-OP	28	34.39			

VDI mean of OP males was very close to being significantly higher than the VDI mean of non-OP males. Although the arbitrary level of a significant difference ($\alpha = .05$) was not obtained, ignoring this result may involve throwing away valuable infomation. The evidence strongly suggests that occupational presentations tended to increase vocational maturity of male students. The trend is clear in that one could say with 94.7% rather than 95% (the set limit) confidence that occupational presentations increased the vocational maturity of male students.

CHAPTER VII

SUMMARY AND IMPLICATIONS

Summary

The present project has been primarily concerned with the effectiveness of occupational presentations in enhancing realistic senior-high school program planning. However, relevant literature reviewed suggested that an effective system for analyzing and organizing such information was necessary to take full advantage of the occupational presentations. Therefore, the effectiveness of Decision-Making (Zingle et al., 1968) in supplying this need was also considered.

Preceeding chapters have described the convergence of theory, research, and practice to supply the basis for the hypotheses formulated. A detailed description of the experiment conducted, to test the hypotheses, has been provided. The conclusions indicated by the results of experimental data analyses are the following.

a. Occupational presentations were effective in increasing only male student ability to plan senior-high school programs realistically.

b. Decision-Making did not affect student ability to plan senior-high school programs realistically.

c. Only when occupational presentations were accompanied by Decision-Making, were they effective in significantly increasing student occupational awareness.

d. Occupational presentations showed a strong tendency to increase the vocational maturity of male students.

Discussion

Although other data analyses did not derive differences that were statistically significant, there were no strong indications of evidence supporting expectations contrary to those presented. Minor reversals of expected order of results are attributed to variations that existed in programs among the schools. Thus, it is suggested that the slight negative effects, associated with OP for female criterion scores and with DM for combined sexes and males may have been due to variations in intensity or uncontrolled factors in the four Grade Nine Guidance programs.

It was expected that occupational awareness, (resulting from occupational presentations) was responsible for increase in realistic program planning ability associated with occupational presentations. Results showed this expectation to be only partly true. The correlation between OIS scores and Projected program realism scores was 0.37 (N = 120). The strong trend of occupational presentations to increase student vocational maturity (see TABLE 23, page 55) suggests another responsible factor since the coefficient of correlation between Projected program realism scores and VDI scores was 0.43 (N = 120).

The apparent ineffectiveness of Decision-Making, in increasing student vocational maturity and ability to plan senior-high school programs realistically, is somewhat baffling. This is especially true since students' use of Decision-Making fulfilled its purpose of supplying an effective system for organizing occupational information. It is possible that the construct underlying the Vocational Development Inventory: Attitude Scale is not congruent with the contents of Decision-Making, and that the vocational choice Competence Test that Crites (1965, p. 7) is presently preparing will be a better test of the effectiveness of Decision-Making; however, other explanations are possible. Although the

designations DM and non-DM only referred to students being provided or not being provided with copies of Decision-Making, no control was established for Grade Nine Guidance teachers using the text as a resource book. It is not unlikely, since Decision-Making was available to the teachers, that teachers presented the approach to educational-vocational decisions described by Decision-Making without providing students with copies of the text. Therefore, a better controlled experiment would be necessary to thoroughly test the effectiveness of students' use of Decision-Making. Another possible reason for this apparent ineffectiveness may be that inservice or classroom aids such as Personalizing Decision Making (Zingle and Fox, 1969), accompanying the use of the text, are necessary. Since the basic structure of Decision-Making appears quite complex to this observer, the way the text was used, rather than the text itself, may have been ineffective. The latter seems the most likely explanation.

The increase in vocational maturity as a result of exposure to occupational presentations was not expected. Literature reviewed earlier made no strong suggestion that this should occur. However, Blocher's statement, that, "Developing realistic stereotypes of people in various career fields and realistic and well-elaborated concepts of self and the ideal self are very important," (1966, p. 58) can be interpreted as a hint in this direction. Thus, it seems that occupational presentations have much to offer educational-vocational progress to students.

Implications

The author is fully aware of the limitations of the present project, especially of the lack of controls regarding Decision-Making. However, based on the strengths of this project, several recommendations are possible.

a. Classroom presentations, by representatives of various occupations, are definitely beneficial to male students' educational-vocational progress and should be encouraged. Comparable programs for female students require further research.

b. The Decision-Making text (Zingle et al., 1968) is very effective in providing a system for studying occupations, and is recommended for this purpose. However, further research is necessary, to determine the best methods to use, to gain full advantage of the text.

c. The Occupational Infomation Scale seems to test occupational awareness effectively, but further validation and refinement is necessary.

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APPENDICES

APPENDIX A

SIMULATED SENIOR HIGH SCHOOL PROGRAM PLANNING

Tape Recorded Instructions

Hello! Please pay close attention to what I say, because for the next while, I am going to be your instructor. In spite of the fact that I look like a machine, I am really a fellow that is interested in learning about the kinds of things that help grade nine students plan their Senior High years well. The reason you are here, is because you have been chosen by a computer to help me in this project. Your teacher is here to make sure things go well, and to turn me on and shut me off at the right times. I'll be asing you to do several things for me. I want you to understand that nobody, but I, will be using this information for research only. You will be asked to plan a Senior High Program. This program will not affect you next year in grade ten. You have already pre-registered for next year. The program you plan is only to help me understand what students need to know to plan well.

Now, there are several things you will need during the next while. Please be sure you have a pencil or pen, a sheet of white paper with the title "Senior High Program" on it, and a booklet called "Planning Your Program" from St. Joseph Composite High School. I will pause now so that your teacher can check to make sure you all have the materials you need.

(PAUSE)

You may be interested to know that the program you will be planning would have been suitable if you had been registering for St. Joe's a year ago. In other words, we will be using out-dated infomation, for you it has no value, but for my purposes, it is fine.

The first thing I want you to do is to write your name, sex, age, date of

birth and school on the "Senior High Program" sheet. I will pause now and your teacher will turn me on again when you're all ready. Please do not go ahead of my instructions.

(PAUSE)

Now, in the "occupational choice" blank on the same sheet, please write down the occupation you think you would most like to work at after you have finished school and training. If you are not sure, don't be alarmed, many people are not sure, but please write down what you think you would probably most like to do. I will pause now until you are all ready to go on to the next step. Please do not go ahead of my instructions.

(PAUSE)

In the blank "Education and training after High School", fill in what you think is necessary after high school for you to get the job you have identified in the "occupational choice" blank. It may be NAIT (Northern Alberta Institute of Technology), University, Apprenticeship, a special school, or maybe none. Now, fill in the blank. I will pause and wait until you are ready. Please, do not go ahead of my instructions.

(PAUSE)

Now, as you did when you pre-registered for next year, please fill in your Easter Report Card marks in the correct box. If you know the percentage, give that; if you got a letter grading, give that. If you are not sure, make a very accurate guess. Where you see "Op" for option, fill in the name of the option, and give your mark. Where you see "Approximate Average" under the box for your Easter marks, estimate your average for your Easter marks. Please fill in your Easter Report Card marks now. I will pause until you have finished.

(PAUSE)

We have now come to the most difficult part of this exercize — the planning of the Senior-High years. However, if you follow my instructions carefully, you should have no difficulty.

First, I want you to assume that you will pass your grade nine departmental examinations. Your Easter marks may be low, but please assume that you will pass. Second, assume that you will be able to and will complete high school and earn at least a simple diploma. So, all of you will get through grade twelve that is how you will plan. Please open the "Planning Your Program" booklet to the blue pages in the front that show the courses offered at St. Joseph High. Please be careful not to write on this booklet. I will pause for a moment.

(PAUSE)

Notice that there are two pages of courses offered. Also, notice that there are instructions numbered from 1 to 11 on the bottom of the right hand page. You will use these pages, so remember where they are. (Momentary PAUSE)

Now, turn to the first blue page at the back of the booklet. (Momentary PAUSE)

Notice that there are boxes describing each year of whatever program a student chooses. (Momentary PAUSE)

First there are the Matriculation and General programs. (Momentary PAUSE)

Turn the page. (Momentary PAUSE)

Then the Technical Matriculation, the Technical, and the Technical Trade programs. (Momentary PAUSE)

Turn the page. (Momentary PAUSE)

You are now looking at the Business Programs; the Business Matriculation Program at the top of the page, and the Business Education Programs of which there are four. (Momentary PAUSE)

You cannot take the Special Business Education Program at the bottom of the page, so forget about it. If you turn the page again, you will find the Food Preparation and Commercial Food Service Programs. This is just a special example of the Technical Programs. Unless, you choose to take such a program, ignore these last programs. Remember where these programs are, because they will help you plan.

I want to bring one more page to your attention, and that is the last white page (just before the blue ones) towards the back of the book. (Momentary PAUSE)

Notice that one side tells you about the University of Alberta entrance requirements for each faculty. (Momentary PAUSE)

The other side tells you about NAIT (that is, the Northern Alberta Institute of Technology) Academic Requirements. (Momentary PAUSE)

O.K. now we will start planning. (Momentary PAUSE)

FIRST, look at your occupational choice and Educational Training after High School. (Momentary PAUSE)

SECOND, look at your Easter Marks. (Momentary PAUSE)

Now turn to the blue pages at the back of the booklet and find the program that best fits you when consider your occupational choice and your Easter marks. (Momentary PAUSE)

Notice that, at the beginning of each program, you are told the minimum requirements for being allowed to register in that program. At the other end of the program, you are told where the program will get you (whether entrance to University, or NAIT, or whatever). (Momentary PAUSE)

Look over the programs, paying attention to what marks you need to get in and where the program will get you. Choose the program most suitable for you and write down its name in the blank "Name of High School Program Chosen" on

your "Senior-High Program" sheet. I will pause and give you several minutes to do so.

(PAUSE)

Now, from the programs on the blue pages at the back of the booklet, write down the courses you must take in each year. Also, write down your choices where you are given a choice of several courses. Remember that there are University and NAIT Requirements—— check them if you are not sure what they are. Do not do the Electives yet. Please wait for instructions before choosing your electives. I will pause now for several minutes—— please work quickly.

(PAUSE)

Now, you will do the electives. Remember that Electives for Grade Eleven students may be chosen from any Grade Ten or Eleven course, provided the student has the pre-requisite. For example, you cannot take Bookkeeping 20 unless you have already completed Bookkeeping 10. Also, a grade twelve student may choose electives from grade ten, eleven or twelve courses.

Now, please fill in your Electives—— choose them from the blue pages at the front of the booklet. I will pause for several minutes.

(PAUSE)

You have finished planning—— congratulations! But just to be sure things went well, add up the credits for each grade. The maximum possible in any one year is 37—— be sure you do not have more than 37 credits in any one year. Also, remember that you must have at least 100 credits in total. Please correct any errors you might have made and wait for your teacher to collect the booklets and pages. Thank you very much for working on this project with me.

SENIOR HIGH PROGRAM

NAME_____ SEX____ AGE____ DATE OF BIRTH_____ SCHOOL_____

OCCUPATIONAL CHOICE_____ ED'N OR TRAINING AFTER HIGH SCHOOL_____

NAME OF HIGH SCHOOL PROGRAM CHOSEN_____

EASTER MARKS		GRADE TEN		GRADE ELEVEN		GRADE TWELVE		FOURTH YEAR (if program requires)	
Subject	Marks	Subject	Credit	Subject	Credit	Subject	Credit	Subject	Credit
Language		English	5	English	5				
Literature		Social St. 10	5						
Social Studies		P.E. 10	5						
Mathematics		Math.	5						
Science									
Health									
P.E.									
Op.									
Op.									
Approx. Av.		Credits		Credits		Credits		Credits	

TOTAL SR. HIGH CREDITS
(must be at least 100 for Diploma)_____

APPENDIX B

REALISTIC PROGRAM PLANNING

RATING SHEET

RATING SCALE

CRITERIA

A	B	C	D	COMBINED
100	100	100	100	100
95	95	95	95	95
90	90	90	90	90
85	85	85	85	85
80	80	80	80	80
75	75	75	75	75
70	70	70	70	70
65	65	65	65	65
60	60	60	60	60
55	55	55	55	55
50	50	50	50	50
45	45	45	45	45
40	40	40	40	40
35	35	35	35	35
30	30	30	30	30
25	25	25	25	25
20	20	20	20	20
15	15	15	15	15
10	10	10	10	10
5	5	5	5	5
0	0	0	0	0

Rater's Initials _____

PROGRAM NO. _____

STUDENT'S SEX _____

STUDENT'S I.Q.:

Language _____

Non-Language _____

Total _____

DIRECTIONS:

You are to rate each grade nine student's projected SENIOR-HIGH PROGRAM on four separate scales and one combined scale (draw a line through the scales at any multiple of 5).

Criterion A: Rate the realism (appropriateness) of the program in view of his/her EASTER MARKS.

Criterion B: Rate the realism (appropriateness) of the program in view of his/her I.Q.

Criterion C: Rate the realism (appropriateness) of the program in view of his/her KUDER INTEREST PROFILE.

Criterion D: Rate the realism (appropriateness) of the program in view of his/her indicated VOCATIONAL CHOICE.

COMBINED: Give a COMBINED RATING. No doubt each of the criteria differ in importance. Perhaps one or two of them are much more important than the others. It is not necessary for you to decide on the weightings you would assign to each criterion and then work out the mathematical average. Simply indicate an OVER-ALL RATING on the COMBINED scale.

OCCUPATIONAL CHOICE _____ ED'N OR TRAINING AFTER HIGH SCHOOL _____

NAME OF HIGH SCHOOL PROGRAM CHOSEN _____

EASTER MARKS		GRADE TEN		GRADE ELEVEN		GRADE TWELVE		FOURTH YEAR (if program requires)	
Subject	Marks	Subject	Credit	Subject	Credit	Subject	Credit	Subject	Credit
Language		English	5	English	5				
Literature		Social St. 10	5						
Social Studies		P.E. 10	5						
Mathematics		Math.	5						
Science									
Health									
P.E.									
Op.									
Op.									
Approx. Av.		Credits		Credits		Credits		Credits	

TOTAL SR. HIGH CREDITS _____
(Must be at least 100 for Diploma)

APPENDIX C

PROGRAM REALISM RATING

Transfomation of Ratings

As indicated on the previous pages, counsellors rated subjects' programs in multiples of five on 100-point scales. Since means and variances were expected to differ among the counsellor ratings on each Criterion, transfomation of counsellor ratings into z scores was considered necessary. By transfoming Criteria ratings into z scores, Criteria scores were made comparable. Hence it was possible to average the three scores each subject received on each Criterion. The resultant average z scores formed the basis of comparisons of subjects on Criterion A, B, C, D, and on the Combined criterion.

Derivation of Projected Scores

Step-wise multiple linear regression was used to obtain the weights of Criteria A, B, C, and D that best predicted the Combined criterion. The analysis was perfomed on the z scores (see above) of subjects for each Criterion. Thus, the proportions obtained, presented in TABLE 24, reflect each counsellors ratings. These weights were then applied to subjects' z scores on Criteria A, B, C, and D by using multiple linear regression, resulting in a Projected score for each subject. These Projected scores were used along with scores on each of Criterion A, B, C, D, and the Combined score for comparison of subjects.

TABLE 24

WEIGHTS OF CRITERIA A, B, C, AND D THAT BEST PREDICT THE COMBINED CRITERION

CRITERIA	A	B	C	D	CONSTANT
Weights	0.351	0.268	0.272	0.322	0.003

APPENDIX D

OCCUPATIONAL INFORMATION SCALE

DIRECTIONS FOR ADMINISTERING

NOTE:

Only the instructions in upper case letters are to be read to the students.

There is no time limit on this test, but one hour should be sufficient. However, it is very important that every student answer every question.

DO:

(1) Please require the students to have HB pencils.

(2) Pass out one test and one answer sheet to each student.

(3) Have the students fill in the general infomation at the top of the answer sheet (i.e. NAME, DATE, SCHOOL, NAME OF TEST, SEX).

(4) Say to the students:

LOOK ON THE FIRST PAGE OF THE TEST. FIND THE "DIRECTIONS TO STUDENTS". READ THEM TO YOURSELVES WHILE I READ THEM ALOUD.

(Pause and make sure all the students are ready.)

THIS IS NOT A REGULAR SCHOOL TEST; IT IS A SET OF QUESTIONS THAT WILL SHOW HOW MUCH YOU KNOW ABOUT OCCUPATIONS.

THERE IS NO TIME LIMIT, BUT DO NOT SPEND TOO MUCH TIME ON ANY ONE QUESTION.

IT IS VERY IMPORTANT THAT YOU ANSWER EVERY QUESTION. IF YOU ARE NOT SURE OF THE ANSWER TO A QUESTION, MARK THE ONE YOU THINK IS MOST LIKELY TO BE CORRECT.

BE SURE TO MARK YOUR CHOICE ON THE ANSWER SHEET. MAKE YOUR MARKS DARK BUT INSIDE THE GUIDELINES. IF YOUR CHOICE TO A QUESTION IS "b" YOU MARK IT LIKE THIS:

(Demonstrate on the blackboard.)

A 1 B 2 C 3

BE SURE THE NUMBER OF THE QUESTION MATCHES WITH THE

NUMBEROF THE ANSWER SPACES IN PART I OF YOUR ANSWER SHEET. DO NOT MISS ANY QUESTIONS.

IF YOU WANT TO CHANGE AN ANSWER, BE SURE TO ERASE YOUR FIRST ANSWER COMPLETELY.

Ask the students, "ARE THERE ANY QUESTIONS?" (Answer questions so that students know what they are to do.)

Say to the students:

READ THE INSTRUCTIONS WITH EACH SET OF QUESTIONS CAREFULLY SO THAT YOU KNOW HOW TO ANSWER THE QUESTIONS.

BE SURE YOU ANSWER EVERY QUESTION.

YOU MAY BEGIN NOW.

(5) Check to be sure student are following instructions correctly. You may help them on how to answer questions, but please do not provide them with the meanings of occupational terms as that will affect the validity of the test.

(6) When students have finished, ask them to check whether or not they have answered every question.

(7) Collect the tests and answer sheets.

OCCUPATIONAL INFORMATION SCALE
(O. I. S.)

DIRECTIONS TO STUDENTS:

This is not a regular school test; it is a set of questions that will show how much you know about occupations.

There is no time limit, but do not spend too much time on any one question.

It is very important that you answer every question. If you are not sure of the answer to a question, mark the one you think is most likely to be correct.

Be sure to mark your choice on the answer sheet. Make your marks dark but inside the guidelines. If your choice to a question is "b", you mark it like this:

A 1 B 2 C 3

Be sure the number of the question matches with the number of the answer spaces in PART I of your answer sheet. Do not miss any questions.

If you want to change an answer, be sure to erase your first answer completely.

A. Each question in this set of questions gives you three choices. Show which choice you think is the best answer by putting a heavy black line in the correct space on your answer sheet. Be sure to choose only one of a., b., or c.

1. Someone who is required to have above-average eye-hand coordination would be .....

   a. a key-punch operator
   b. an estimator
   c. a credit authorizor

2. An applicant for apprenticeship as a ..... must have completed two years of high-school.

   a. shirt presser
   b. masseur
   c. hairdresser

3. Training for ..... is, for the most part, on-the-job training.

   a. tailors
   b. shoe repaimen
   c. engravers

4. The work of ..... is most often in the field of building trades.

   a. an undercoater
   b. a cable splicer
   c. an electrician

5. ..... usually work a regular forty-hour week.

   a. Service station attendants
   b. Chauffeurs
   c. Film editors

6. A ..... most important function is handling correspondence.

   a. secretary's
   b. receptionist's
   c. typist's

7. A successful ..... requires long term planning ability.

   a. general farmer
   b. greenskeeper
   c. sprayer

8. ..... must follow plans precisely.

   a. A fashion artist
   b. A credit analyst
   c. An airline pilot

9. ..... work is a relatively new field of work that is growing in importance.

   a. An office machine serviceman's
   b. A millwright's
   c. A boilemaker's

10. To become ..... a person should take a business program in high school.

   a. mail sorter
   b. statistician
   c. bookkeeper

11. ..... is responsible for keeping the cabin well heated and ventilated.

   a. A waiter
   b. A guide
   c. An airline stewardess

12. A ..... spends three-quarters of his time at indoor jobs.

   a. mushroom grower
   b. general farm-hand
   c. tree-trimming foreman

13. To become a first-class ..... the accepted method is training as an apprentice.

   a. surgical dressing maker
   b. machinist
   c. labourer

14. A newspaper editor.....

   a. is usually seated in the editorial room where he is subject to many distractions.
   b. works in a quiet office where reporters, photographers and other workers hand in their work.
   c. is not usually involved in deciding how news articles, prepared by reporters, should be published.

15. Toolmakers .....

a. should enjoy working outdoors.
b. should have better than average aptitude and ability in mathematics.
c. need not have a good imagination.

16. The work of construction and maintenance painters .....

a. is usually done by working alone.
b. is still seasonal to some extent.
c. is well protected from unskilled workers getting the job.

17. To be a successful optician a person .....

a. must have ability and a liking for art, mathematics, and physics.
b. must have high academic ability so that he can succeed in the senior matriculation program.
c. should be sympathetic and tolerant and able to cooperate with others.

18. A hotel clerk .....

a. usually stands while working
b. does a lot of lifting and carrying.
c. belongs to a strong union.

19. In preparation for a successful career as a poultryman .....

a. it is possible to take a two-year course at a provincial agricultural college.
b. a person would have to attend a university in the Faculty of Agriculture to receive formal education.
c. on-the-job training ia all that is necessary.

20. A junior arborist .....

a. usually spends about half of his time in the office.
b. supervises labourers while they prune trees.
c. spends much of his time climbing trees.

21. To be able to do the work of a dental laboratory technician a person .....

a. must have no speech or hearing impediment.
b. must have good vision and sense of touch.
c. must have above average intelligence.

22. The work of an aerospace engineer .....

a. is most likely to involve missile-launching.
b. is most often perfomed in a design office, or in a research or testing laboratory.
c. usually involves long and irregular hours.

23. A bus or trolley coach operator .....

a. must be at least twenty-one years of age.
b. usually receive no training.
c. must have a grade twelve diploma.

B. Choose the statement, in each question, that is most likely to be untrue of the year 2000 A.D. Be sure to choose only one of either a., b., or c.

24. a. robot cars, buses, trains, and electronic control of traffic.
b. a return to the more natural kinds of foods and clothing material.
c. air-conditioned houses, cars, offices, schools.

25. a. the poor getting poorer, and the rich getting richer, in an affluent society.
b. wrist phones, and miniature, portable T.V sets.
c. homes, schools, factories antiseptically and automatically cleaned.

26. a. reclaiming and repairing things to cut the expense of living.
b. buildings without windows.
c. climate or weather control over large sections of the world.

27. a. lengthened life-span.
b. close to 95% of people living in cities and towns.
c. 3 weeks paid vacations for everyone.

28. a. no increase in the length of schooling.
b. long-term or permanent unemployment for a large segment of the population.
c. retraining necessary several times during a career.

29. a. equality of man and woman at home and at work.
b. nearly all unskilled jobs gone.
c. 40 hours work-week.

30. a. movement of materials by truck and train, rather than pipelines and conveyor belts.
b. retraining of all workers every five years for new jobs.
c. moving from city to city every five years because of job changes.

31. a. extension of help to, and sending workers to serve in underdeveloped countries.
    b. men preferred to women on the job because of their greater physical strength.
    c. irrigation and reclamation of desert lands.

C. In each question, choose the occupation you think will provide employment for a larger percentage of the labour force than it does now. Be sure to choose only one of a., b., or c. and mark it on your answer sheet.

32. a. Policeman
    b. Business management consultant
    c. Farm worker

33. a. Physician
    b. Coal miner
    c. Draftsman

34. a. Bricklayer
    b. Writer
    c. Bus driver

35. a. Rubber worker
    b. Trapper
    c. Teacher

36. a. Salesman
    b. Conductor
    c. Metallurgist

D. In each question, choose the occupation you think will pobably provide employment for about the same percentage of the labour force as at present. Be sure to choose only one of a., b., or c. and mark it on your answer sheet.

37. a. Advertising man
    b. Court reporter
    c. Dietician

38. a. Warehouseman
    b. Travel agent
    c. Plastics worker

39. a. Watchmaker
    b. Weather forecaster
    c. Bank teller

40. a. Telephone installer
    b. Routeman (bread, milk)
    c. Psychologist

41. a. Mechanical Engineer
    b. Plant manager
    c. Logger

E. In each question, choose the occupation you think will probably provide opportunity for employment for a smaller percentage of the labour force than it does now. Be sure to choose only one of a., b., or c. and mark it on your answer sheet.

42. a. Meter reader
    b. Bank manager
    c. Civil engineer

43. a. Dentist
    b. Printer
    c. Plasterer

44. a. Phamacist
    b. Labourer
    c. Recreation director

45. a. Longshoreman
    b. Accountant
    c. Agricultural technologist

Check to see that you have answered every question —— it is very important that you do.

APPENDIX E

STATISTICS ON OCCUPATIONAL INFORMATION SCALE ITEMS

TABLE 25

LEVELS OF DIFFICULTY AND ITEM-TOTAL BISERIAL CORRELATIONS FOR OCCUPATIONAL INFORMATION ITEMS USED IN PILOT PROJECTS

PILOT PROJECT 1 (N=72)			PILOT PROJECT 2 (N=75)			OIS
ITEM NO.	Level of Difficulty	ITEM - TOTAL r	ITEM NO.	Level of Difficulty	ITEM - TOTAL r	ITEM NO.
1	0.903	0.213	1	0.773	0.154	
2*	0.181	0.311	2	0.787	0.160	14
3	0.736	0.138	3*	0.827	0.742	1
4	0.569	0.283	4*	0.560	0.316	2
5	0.597	0.176	5	0.840	0.027	
6	0.778	-0.038	6	0.800	0.133	
7*	0.417	0.260	7	0.027	-0.345	15
8	0.292	0.192	8*	0.440	0.346	3
9	0.736	0.145	9*	0.547	0.204	4
10	0.389	0.133	10*	0.707	0.286	5
11	0.639	-0.206	11	0.440	0.089	
12	0.556	0.053	12	0.493	0.036	
13	0.708	0.229	13*	0.533	0.433	6
14	0.264	0.010	14	0.400	-0.024	
15	0.625	0.282	15*	0.667	0.381	7
16	0.431	-0.105	16	0.613	-0.234	
17	0.792	0.108	17	0.427	0.181	
18*	0.569	0.277	18	0.760	0.211	16
19*	0.333	0.351	19	0.733	0.308	17
20	0.542	0.164	20	0.933	-0.047	
21	0.111	0.157	21	0.173	0.032	
22	0.472	0.232	22*	0.653	0.303	8
23*	0.722	0.288	23	0.920	0.396	18
24	0.444	0.057	24	0.880	0.230	
25*	0.472	0.323	25	0.453	0.242	19
26*	0.375	0.315	26	0.720	0.429	20
27	0.764	0.123	27*	0.613	0.385	9
28*	0.472	0.335	28	0.440	0.058	21
29	0.431	-0.001	29	0.533	0.148	
30	0.542	0.146	30	0.213	0.039	
31*	0.625	0.307	31	0.467	0.284	22
32	0.444	0.008	32	0.400	0.089	
33	0.944	0.104	33*	0.813	0.302	10
34	0.361	0.020	34*	0.720	0.494	11
35	0.069	0.301	35*	0.693	0.217	12
36	0.958	0.307	36	0.827	0.091	
37	0.194	0.066	37*	0.613	0.372	13
38	0.111	-0.085	38	0.173	0.174	

TABLE 25 (continued)

PILOT PROJECT 1			PILOT PROJECT 2			OIS
ITEM NO.	Level of Difficulty	ITEM - TOTAL r	ITEM NO.	Level of Difficulty	ITEM - TOTAL r	ITEM NO.
39	0.111	-0.059	39	0.573	-0.138	
40*	0.306	0.212	40	0.547	0.161	23
41	0.847	0.306	41	0.853	0.640	
42*	0.806	0.283	42*	0.853	0.672	24
43*	0.750	0.290	43*	0.720	0.465	25
44*	0.458	0.308	44*	0.400	0.452	26
45*	0.542	0.213	45*	0.720	0.422	27
46*	0.486	0.175	46*	0.493	0.436	28
47*	0.625	0.389	47*	0.733	0.389	29
48*	0.750	0.237	48*	0.840	0.176	30
49*	0.722	0.252	49*	0.787	0.501	31
50	0.549	0.086	50	0.707	0.180	
51*	0.509	0.616	51*	0.387	0.121	32
52*	0.600	0.533	52*	0.440	0.199	33
53*	0.673	0.767	53*	0.467	0.430	34
54*	0.655	0.546	54*	0.747	0.121	35
55*	0.745	0.699	55*	0.547	0.405	36
56*	0.436	0.291	56*	0.307	-0.252	37
57*	0.491	0.524	57*	0.427	0.175	38
58*	0.236	0.193	58*	0.293	0.220	39
59*	0.400	0.432	59*	0.373	0.453	40
60*	0.309	0.501	60*	0.347	0.221	41
61*	0.796	0.760	61*	0.720	0.566	42
62*	0.444	0.503	62*	0.653	0.460	43
63*	0.630	0.686	63*	0.533	0.440	44
64	0.185	-0.061	64	0.200	-0.081	
65*	0.722	0.656	65*	0.613	0.618	45

Item difficulty limits were 0.16 to 0.85.
The item - total biserial correlation limit was set at 0.195.
* Indicates that the item was used in the final form of the OIS. Since items 41 to 65 were identical in both projects, asteriscs appear beside the item numbers of both projects if the item was used in the OIS.

TABLE 26

LEVELS OF DIFFICULTY AND ITEM-TOTAL BISERIAL CORRELATIONS

CALCULATED FROM EXPERIMENTAL SUBJECT RESPONSES

ITEM NO.	Level of Difficulty	ITEM - TOTAL r	ITEM NO.	Level of Difficulty	ITEM - TOTAL r
1	0.608	0.323	24	0.717	0.633
2	0.650	0.212	25	0.725	0.527
3	0.400	0.360	26	0.417	0.460
4	0.617	0.126	27	0.500	0.492
5	0.733	0.143	28	0.408	0.521
6	0.442	0.376	29	0.550	0.497
7	0.575	0.438	30	0.600	0.562
8	0.725	0.097	31	0.700	0.407
9	0.800	0.458	32	0.442	0.403
10	0.908	-0.049	33	0.500	0.327
11	0.708	0.500	34	0.392	0.487
12	0.592	0.256	35	0.733	0.418
13	0.708	0.040	36	0.575	0.354
14	0.175	0.114	37	0.333	-0.181
15	0.558	0.048	38	0.458	-0.025
16	0.608	0.388	39	0.267	0.281
17	0.350	0.231	40	0.275	0.376
18	0.783	0.220	41	0.375	0.292
19	0.408	0.400	42	0.775	0.625
20	0.167	-0.041	43	0.675	0.518
21	0.508	0.399	44	0.508	0.407
22	0.508	0.278	45	0.731	0.574
23	0.442	0.300	(N = 120)